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(ANSI and ISO TEST CHART No. 2)

1.0 2.8 2.5 3.2 2.2 3.6 2.0 4.0 1.8 1.1 1.25 1.4 1.6

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Thomas A. Edison Papers

A SELECTIVE MICROFILM EDITION

PART IV
(1899–1910)

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University Publications of America
Bethesda, MD
1999

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Thomas A. Edison Papers
at
Rutgers, The State University
endorsed by
National Historical Publications and Records Commission
18 June 1981

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The original documents in this edition are from the archives at the Edison National Historic Site at West Orange, New Jersey.

ISBN 0-89093-703-6

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Notebook, N-11-07-21

July ~~Aug~~ 21 1911

Rome Co.,
MFG. STATIONERS,
69 FULTON STREET,
NEW YORK.
45008

Holdsworth 769	7835 7880	7799 7798	1047 1077	1263 1310	1287 1350	327 367	1287 1343	1313 1377	467 457	
Holdsworth 770	7715 7740	7799 7800	1067 1090	1330 1320	1357 1350	397 422	1383 1333	1410 1380	473 467	
Holdsworth 771	8090 8035	7801 7802	1057 1100	1297 1353	1343 1373	420 472	1230 1313	1403 1457	440 453	
Holdsworth 772	7668 7620	7803 7804	1127 1140	1313 1347	1333 1357	433 433	1377 1397	1393 1413	510 477	
Holdsworth 774	7130 7150	7805 7806	830 783	1100 1070	1113 1083	520 520	1213 1170	1260 1217	713 663	
Forbes & Richardson Brunswick Wool Eng BH_2	7270 7253 7318	7807 7808 7809	1227 1227 1227	After 10 hours 20 1530 1527 1537	— — —	1000 1010 970	1520 1530 1543	1527 1537 1553	1190 1190 1190	
Holdsworth 736 - Pressed 300 atmos	7210 7245	7810 7811	1158 1177	1227 1280	1237 1300	590 727	1223 1323	1330 1400	648 647	
Holdsworth 755 - Pressed 300 atmos	7045 7045	7812 7813	1243 1230	1307 1300	1320 1307	577 503	1360 1357	1393 1377	580 533	

7803	1467	1500	605	1457	1503	573
04	1490	1517	608	1447	1527	627
	30			40		
7807	1577	1583	1253	1490	1497	1320
7808	1540	1550	1107	1487	1440	1320
7809	1560	1590	1082	1493	1500	1233
7812	1400	1450	658	1367	1443	670
13	1413	1430	603	1377	1423	600

1443	1490	720	300	1297	1397	480
1347	1447	753		1283	1297	517

all overlay + last 3 places

1297	1410	757	
1270	1363	713	

spot 3 plants
Gust

7603	1297	1433	670	[redacted] Volvat wilt
7604	1107x	1340	607	400

6 days
smaller
spot 1 plant

1153	1310	753
943	1153	693 [redacted]

Goldstein 773 made from $NiCl_2$ & 520 Mnsol. pressed 300 at 1000		7814 7815	1033 1000	1243 1247	1273 1257	383 403	1327 1283	1393 1323	490 463
Goldstein 774 ~~6560~~ 6990 Dry $MnSO_4$ - Rolls - 6450 7110 300 at		7816 7817	1023 1030	1187 1200	1207 1227	410 410	1220 1210	1263 1263	460 455
Goldstein 780 6990 Dry Rollpress 7110 300 at		7818 7819	1103 1107	1240 1277	1257 1297	410 577	1240 1283	1313 1353	460 538
Goldstein 788 6690 Dry $MnSO_4$ 1/2% Cobalt 6630 300 at		7820 7821	923 933	1240 1217	1250 1230	523 520	1280 1243	1330 1327	530 470
Goldstein 789 6595 Dry press oxylic hist 1/2% Co 6685 300 at		7822 7823	990 933	1230 1167	1263 1180	467 400	1000 1200	1380 1270	470 470
Goldstein 790 6449 Dry $NiSO_4$ fine 3% Cobalt 6500		7824 7825	863 880	1193 1210	1200 1220	400 400	1227 1150	1273 1177	473 503
Goldstein 791 6230 6230 pressed 300 at		7826 7827	917 950	1103 1147	1120 1163	410 410	1067 1133	1133 1197	403 407
Goldstein 792 6650 6690 300 at		7828 7829	893 897	1230 1247	1260 1257	403 407	1263 1230	1433 1327	407 413

7814	1430	1490	511	1440	1507	593	
15	1273	1433	468	1090	1500	513	
16	1207	1313	528	1130	1310	573	
17	1273	1380	416	1073	1310	477	
7818	1257	1357	515	1147	1287	570	
7819	1297	1417	541	1027	1293	510	
20	1310	1397	515	1133	1303	473	
21	1147	1398	508	903	1110	437	
7822	1283	Cadaver 1373	468	1090	1240	410	
23	1183	1307	471	997	1090	457	
24	1250	1333	518	1050	1243	457	
25	1233	1330	518	1023	1250	460	
26	1113	1193	455	953	1087	433	
27	1180	1260	471	990	1177	420	

1450	1557	660	1317	1493	422
1343	1433	593	1010	1397	347

all smaller
smaller
smaller + pleasant

993	1163	537
987	997	453

Note

swollen slight
" split + pieces

350		½	H			
7814	1313	1450	667	1127	1360	747
15	1373	1440	533	1200	1367	448

Gelchen 793 300 at	6613 6640	7830 7831	970 960	1197 1143	1210 1353	410 620	1163 1237	1267 1290	420 420	
Reg Mallet — Expt E 8445 Dropped conc $CaCl_2$ Inside Wortman Rockbelow Trench		7832 7833	443 437	900 913	910 923	610 617				
Gelchen 794 300 at	6400 6430	7834 7835	863 890	1083 1123	1100 1133	417 473	1100 1143	1133 1187	420 423	
Gelchen 795	6450 6480	7836 7837	950 912	1113 1130	1127 1143	470 500	1173 1137	1257 1190	497 487	
Gelchen 796 300 at	6465 6480	7838 7839	1037 1047	1127 1177	1150 1190	533 583	1127 1157	1233 1237	417 533	
Strontium Molybdate only	8675 8540	7840 7841	10 10	27 23	33 30	417 417	67 70	70 73	40 43	
Mercury Molybdate only	11910 11908	7842 7843	67 83	60 37	70 43	417 620	1445 6	17 0	60 33	
Lot 117 Roflake 24.3 5 pc	7520 7505	7844 7845	1157 1207	1223 1247	1247 1257	987 987				

Note slot cap. about 1 mg.

7838	1183	1323	638	
39	1230	1310	571	
40	97	100	80	
41	90	97	87	
42	0	0	0	
43	0	0	0	

1960 Reg.	7670 7610	7846 7847	1173 1157		1223 1223	— —	553 557	
1961 Reg	7294 7810	7848 7849	1233 1227		1250 1287	— —	540 563	
1962 "	7835 7813	7850 7851	1213 1177		1243 1217	— —	513 493	
1963 "	7840 7843	7852 7853	1223 1203		1257 1243	— —	473 480	
1964 "	7864 7807	7854 7855	1223 1220		1280 1203	— —	490 477	
					10 lost			
1965 "	7870 7828	7856 7857	1157 1140		1207 1190	1213 1180	680 643	
1966 "	7737 7720	7858 7859	1183 1083		1197 1153	1200 1160	680 613	
1967 "	7780 7809	7860 7861	1087 1153		1140 1187	1147 1193	573 580	
					19480			

10 lost

16 | 19480 (1217)
16
34
32
28
20
16
42
16

					10 last	
1968	7890 7850	7862 7863	1167 1197	1217 1253	1223 1260	587 573
1969	7725 7738	7864 7865	1153 1133	1217 1170	1223 1177	547 540
1970	7760 7731	7866 7867	1157 1187	1197 1243	1200 1250	570 570
1971	7830 7840	7868 7869	1177 1160	1230 1217	1237 1223	567 567
1972	7870 7850	7870 7871	1190 1177	1233 1237	1243 1243	570 573
1973	7890 7810	7872 7873	1187 1133	1273 1190	1277 1197	607 563
1974	7649 7613	7874 7875	1187 1193	1247 1250	1257 1257	587 590
1975	7748 7500	7876 7877	1223 1190	1260 1230	1267 1237	587 587
1976	7775 7730	7878 7879	1177 1177	1227 1237	1230 1243	583 583

					to last		
1977	7670 7650	7880 7881	1113 1133	1177 1190	1183 1200	573 570	
1978	7620 7650	7882 7883	1197 1183	1247 1223	1253 1233	600 587	
1979	7662 7660	7884 7885	1143 1110	1250 1213	1257 1220	610 600	
1980	7785 7760	7886 7887	1157 1177	1197 1223	1200 1230	580 587	
1981	7760 7800	7888 7889	1117 1127	1163 1180	1170 1187	563 570	
1982	7800 7805	7890 7891	1153 1173	1210 1250	1217 1260	583 620	
1983	7758 7734	7892 7893	1193 1177	1237 1183	1243 1190	617 603	
1984	7815 7840	7894 7895	1197 1157	1243 1193	1250 1197	627 633	
1985	7915 7920	7896 7897	1100 1140	1113 1143	1120 1150	553 587	

				10 hut					
1986	7801 01826	7898 7899	1120 1140	1137 1150	1143 1160	550 547			
1987	7900 7940	7900 7901	1103 1167	1127 1187	1133 1197	477 500			
1988	7850 7900	7902 7903	1153 1183	1180 1203	1187 1210	477 477			
1989	7850 7820	7904 7905	1203 1197	1203 1203	1210 1213	473 473			
1990	7850 7845	7906 7907	1223 1193	1233 1200	1240 1210	473 473			
1991	7905 7950	7908 7909	1227 1210	1233 1250	1240 1257	497 510			
N. Off 2 Contacts 1% Cut off 2	7370 7330 7392	7910 7911 7912	1207 1197 1193	10th cell run after 10 hut 1300 1277 1247	— — —	503 497 513	20 1337 1283 1300	1350 1330 1317	537 543 553
1992 Reg.	7.840 7.870	7913 7914	1187 1193	1203 1230	1210 1237	470 493			

79.10	1330	1337	623	
79.11	1280	1277	613	
79.12	1283	1287	620	

						10 but		
$Ni(OH)_2$ 1993 Rg.	7.960	7915	1203	1207	1217	493		
	7.931	7916	1133	1173	1180	473		
" 1994 "	7.840	7917	1223	1217	1223	473		
	7.810	7918	1167	1183	1190	473		
" 1995 "	7.630	7919	1107	1243	1253	760		
	7.605	7920	893	1050	1060	663		
" 1996 "	7.782	7921	1043	1170	1183	670		
	7.800	7922	837	1017	1030	630		
" 1997 "	7.650	7923	1180	1323	1327	627		
	7.685	7924	1183	1290	1307	583		
" 1998 "	7.839	7925	1173	1267	1280	563		
	7.865	7926	1167	1250	1260	523		
" 1999 "	7.810	7927	1147	1263	1273	503		
	7.780	7928	1127	1243	1253	503		
" 2000 "	7.820	7929	1097	1193	1203	503		
	7.860	7930	1157	1190	1190	502		
				50				
Sat 118 Ni 7 hole	7.390	7931	1113	1223	1243	460		
H23.7: 7 4.5	7.372	7932	1097	1227	1250	477		

Sol 119 Ni 7 Cake	7.470	7933	1130	1280	1300	547	
7H 24 7 4.3	7.490	7934	1147	1263	1283	553	
				50	0 but runs		
$Ni(OH)_2$ 2001 Reg.	7.840	7935	1117	1277	1283	490	
	7.860	7936	1133	1243	1253	510	
" 2002 "	7.800	7937	1130	1257	1267	507	
	7.730	7938	1180	1287	1297	520	
" 2003 "	7.730	7939	1143	1283	1290	507	
	7.690	7940	1090	1207	1220	503	
" 2004 "	7.857	7941	1177	1303	1310	537	
	7.829	7942	1177	1310	1317	547	
" 2005 "	7.740	7943	1117	1250	1257	500	
	7.760	7944	1117	1250	1257	503	
" 2006 "	7.830	7945	1173	1307	1317	520	
	7.863	7946	1153	1247	1260	500	
" 2007 "	7.740	7947	1120	1223	1233	500	
	7.790	7948	1160	1317	1327	517	
" 2008 "	7.798	7949	1107	1257	1267	500	
	7.750	7950	1100	1257	1267	497	

$Zn(OH)_2$ 2009 Reg.	7.870	7951	993	1223	1233	493		
	7.862	7952	1127	1257	1267	517		
" 2010 "	7.730	7953	1157	1287	1293	500		
	7.740	7954	1177	1220	1227	497		
" 2011 "	7.850	7955	1087	1213	1227	517		
	7.850	7956	1067	1177	1187	513		
" 2012 "	7.870	7957	1147	1283	1290	547		
	7.875	7958	1120	1220	1230	533		
" 2013 "	7.790	7959	1157	1333	1340	560		
	7.780	7960	1123	1260	1253	527		
R.A. Exp. 1479	7.472	7961	1127	1330	1340	547		
	7.500	7962	1130	1330	1340	547		
$Zn(OH)_2$ 2014 Reg.	7.889	7963	1143	1260	1273	533		
	7.843	7964	1087	1203	1210	513		
" 2015 "	7.850	7965	1083	1253	1267	543		
	7.800	7966	1080	1220	1233	513		
" 2016 "	7.790	7967	1157	1300	1307	543		
	7.730	7968	1087	1263	1277	530		

$Y_2(OH)_2$ 2017 Rig.	7.810	7969	1100	1193	1200	723	
	7.820	7970	1180	1287	1293	767	
" 2018 "	7.915	7971	1107	1227	1233	750	
	7.938	7972	1173	1297	1307	783	
" 2019 "	7.805	7973	1143	1223	1230	750	
	7.795	7974	1177	1260	1267	750	
" 2020 "	7.813	7975	1173	1233	1260	763	
	7.812	7976	1183	1283	1290	767	
" 2021 "	7.750	7977	1220	1327	1333	787	
	7.770	7978	1197	1293	1303	783	
" 2022 "	7.800	7979	1173	1277	1283	763	
	7.750	7980	1213	1337	1343	783	
" 2023 "	7.870	7981	1223	1339	1340	787	
	7.800	7982	1187	1293	1290	760	
" 2024 "	7.720	7983	1133	1237	1243	760	
	7.680	7984	1217	1320	1327	787	
" 2025 "	7.755	7985	1187	1283	1290	783	
	7.784	7986	1217	1293	1300	783	

$Ni(OH)_2$ 2026 Preg.	7.670	7987	1170	1247	1263	783			
	7.733	7988	1173	1233	1260	783			
" 2027 "	7.780	7989	1207	1283	1293	803			
	7.780	7990	1200	1273	1280	867			
" 2028 "	7.785	7991	1220	1282	1293	867			
	7.772	7992	1217	1310	1317	963			
H.H.S. Punching test		7993	1363	50 1300	1377	550	Seams begin opening after 4th run		
$\frac{1}{8}$" tubes (4) 2 $\frac{5}{8}$" long 4 rings each tube		7994	1343	1317	1390	540	" " "		
H.H.S. Punching test		7995	1107	767	833	663	Seams badly open after 3rd run		
Same as 7993 but without rings.		7996	1220	1133	1187	600	" slightly " " " "		
H.H.S. Punching test		7997	1290	1307	1373	563	" " " "		
Same as 7993, but two tubes with, two without rings		7998	1250	1080	1133	520	" " " "		
Goldstein 788, dup. of 7820 only, prepared at 300 atm. into 19. cokes.	7.218	7999	817	1170	1190	323	1187	1213	413
	7.145	8000	917	1320	1320	410	1313	1360	467
Sat 120 Ni 7 tubes	7.382	8001	1193	50 1267	1297	553	1203	1290	627
H 24.1 74.5	7.420	8002	1187	1297	1273	533	1190	1270	627

H.H.S. Exp. $\frac{1}{8}$" tubes, 4 in grid		8003	1277	1263	1327	493	
2.5 " tubes with 4 rings		8004	1333	1207	1323	460	
21 H + 2 Si							
Di this 8003 except		8005	1250	1143	1163	480	
no rings on tubes		8006	1260	1130	1200	487	
				10			
$Ni(CN)_2$ 2029 Reg.	7.860	8007	1190	1267	1277	733	
	7.820	8008	1190	1280	1287	680	
" 2030 "	7.880	8009	1147	1237	1243	597	
	7.890	8010	1170	1253	1260	567	
" 2031 "	7.897	8011	1163	1223	1230	513	
	7.895	8012	1197	1243	1253	510	
" 2032 "	7.865	8013	1187	1247	1250	513	
	7.870	8014	1160	1220	1230	477	
" 2033 "	7.720	8015	1157	1257	1263	480	
	7.740	8016	1197	1280	1287	487	
" 2034 "	7.810	8017	1143	1233	1243	480	
	7.800	8018	1153	1253	1260	477	
" 2035 "	7.710	8019	1157	1230	1237	507	
	7.762	8020	1147	1207	1217	487	

					10	9	.5	
$Yi(OH)_2$	2036	Reg.	7.615	8021	1157	1280	1287	517	
			7.590	8022	1153	1260	1267	500	
"	2037	"	7.700	8023	1183	1307	1313	533	
			7.707	8024	1143	1247	1257	527	
"	2038	"	7.542	8025	1147	1260	1267	500	
			7.596	8026	1153	1260	1267	500	
"	2039	"	7.835	8027	1177	1230	1240	483	
			7.817	8028	1153	1227	1233	497	
"	2040	"	7.678	8029	1213	1273	1283	497	
			7.657	8030	1210	1233	1240	486	
"	2041	"	7.647	8031	1217	1287	1297	533	
			7.652	8032	1183	1220	1230	490	
"	2042	"	7.887	8033	1177	1253	1260	500	
			7.892	8034	1150	1223	1233	473	
"	2043	"	7.822	8035	1133	1193	1200	473	
			7.852	8036	1150	1200	1217	473	
"	2044	"	7.785	8037	1117	1263	1280	520	
			7.795	8038	1143	1227	1237	520	

$Ni(OH)_2$ 2045 Reg.	7.876	8039	1130	" 16	91	57	
	7.850	8040	1127	1200	1213	497	
				1183	1197	487	
" 2046 "	7.675	8041	1133	1217	1237	497	
	7.650	8042	1167	1210	1223	477	
" 2047 "	7.785	8043	1160	1223	1237	500	
	7.805	8044	1163	1237	1247	500	
" 2048 "	7.835	8045	1177	1270	1280	537	
	7.760	8046	1187	1247	1253	523	
W.E.H. Exp. Reg. cells; 21 Ni +2 Si; 1.5 g. potash-proof "Cozodenite" (q.v. 2026A) in each cell		8047	1133	20 1170	1190	530	
		8048	1127	1107	1150	697	
$Ni(OH)_2$ 2049 Reg.	7.709	8049	1067	10 1160	1173	493	
	7.694	8050	1080	1170	1177	493	
$Ni(OH)_2$ 2050 Reg.	7.686	8051	1143	1197	1200	500	
	7.710	8052	1093	1153	1160	463	
" 2051 "	7.776	8053	1117	1197	1203	467	
	7.760	8054	1117	1200	1213	467	
" 2052 "	7.675	8055	1110	1173	1180	470	
"	7.725	8056	1127	1200	1213	467	

$Ni(OH)_2$	2053	Reg	7.635	8057	1210	1223	1233	843	
			7.636	8058	1173	1190	1197	733	//
$Ni(OH)_2$	2054	"	7.690	8059	1140	1197	1203	697	
			7.705	8060	1117	1137	1147	647	//
"	2055	"	7.640	8061	1173	1207	1213	543	
			7.660	8062	1220	1277	1287	573	//
"	2056	"	7.697	8063	1207	1230	1260	540	
			7.689	8064	1217	1243	1253	500	//
"	2057	"	7.696	8065	1197	1233	1243	503	
			7.640	8066	1230	1257	1263	497	//
"	2058	"	7.733	8067	1230	1230	1240	500	
			7.670	8068	1240	1280	1287	500	//
"	2059	"	7.807	8069	1210	1237	1247	503	
			7.810	8070	1210	1233	1243	500	//
"	2060	"	7.820	8071	1240	1283	1293	550	
			7.780	8072	1210	1253	1267	537	//
"	2061	"	7.740	8073	1160	1223	1237	550	
			7.722	8074	1250	1263	1280	517	//

Wall	2062	Reg.	7.650	8075	1230	1280	1287	533		
			7.684	8076	1257	1323	1330	553		
"	2063	"	7.670	8077	1213	1253	1263	517		
			7.610	8078	1193	1263	1277	517		
"	2064	"	7.650	8079	1247	1293	1307	510		
			7.700	8080	1190	1247	1253	497		
"	2065	"	7.620	8081	1113	1263	1277	500		
			7.620	8082	1250	1290	1304	507		
"	2066	"	7.650	8083	1247	1280	1287	520		
			7.695	8084	1237	1257	1263	490		
"	2067	"	7.660	8085	1213	1233	1240	490		
			7.630	8086	1263	1263	1267	490		
"	2068	"	7.702	8087	1227	1123	1133	490		
			7.670	8088	1193	1213	1223	490		
"	2069	"	7.586	8089	1243	1283	1293	413		
			7.558	8090	1223	1247	1250	490		
"	2070	"	7.630	8091	1277	1283	1293	500		
			7.610	8092	1263	1253	1263	487		

Mi(OH)$_2$ 2071 Reg.	7.690	8093	1230	1440	1447	487	
	7.635	8094	1220	1257	1263	513	
" 2072 "	7.655	8095	1237	1227	1233	543	
	7.680	8096	1187	1247	1257	513	
" 2073 "	7.700	8097	1217	1237	1243	513	
	7.730	8098	1133	1170	1177	473	
" 2074 "	7.660	8099	1197	1210	1217	477	
	7.640	8100	1200	1240	1283	467	
Lot #122 Mi Fl. for Lab. use.	7.460	8101	1260	1247	1300	543	
Mi(OH)$_2$ 1256	7.430	8102	1253	1270	1303	570	
Lot 121 Mi Fl.	7.580	8103	1167	1260	1250	643	
Mi(OH)$_2$ 1256	7.585	8104	1163	1263	1250	413	
Lot 122 Mi Fl.	7.703	8105	1167	1240	1263	360	
Mi(OH)$_2$ 1256	7.690	8106	1160	1240	1263	350	
Mi(OH)$_2$ 2075 Reg.	7.720	8107	1227	1273	1283	987	
	7.750	8108	1247	1303	1313	827	
" 2076 "	7.713	8109	1270	1317	1327	759	
	7.700	8110	1263	1300	1313	717	

$Ni(OH)_2$ 2079 Reg.	7.745 7.765	8111 8112	1240 1267	1270 1283	1280 1290	667 620	//				
" 2078 "	7.650 7.660	8113 8114	1217 1250	1230 1257	1257 1260	640 587	// 100				
W.E.H. Exp. ½" Tubes with indentations to receive rings of adjacent tubes. Long tubes		8115 8116	2007 2090	1867 1967	1957 2117	360 368	1860 1867	2040 2007	883 817		
W.E.H. Exp. Same without indentations as above. Long tubes		8117 8118	1993 2120	1900 2067	2033 2217	364 394	1817 1920	1997 2183	763 760		
$Ni(OH)_2$ 2079 Reg.	7.764 7.700	8119 8120	1240 1247	1263 1267	1270 1270	567 563	//				
" 2080 "	7.670 7.620	8121 8122	1260 1257	1283 1280	1293 1290	557 527	//				
" 2081 "	7.500 7.570	8123 8124	1283 1263	1277 1230	1287 1247	557 533	//				
" 2082 "	7.690 7.655	8125 8126	1283 1290	1270 1243	1280 1237	517 530	//				
" 2083 "	7.630 7.645	8127 8128	1260 1272	1293 1280	1303 1293	517 520	//				

8115	1760	1920	1700	1757	1917	773
8116	1743	1900	703	1680	1843	693
8117	1702	1903	717	1673	1847	700
8118	1913	2053	790	1800	1997	737

1610	1727	653
1573	1667	617
1560	1650	590
1660	1800	593

Ni(OH)2	2084	Reg.	7.692 7.620	8129 8130	1257 1260	1297 1307	1307 1320	560 560				
"	2085	"	7.666 7.685	8131 8132	1293 1297	1327 1340	1337 1347	563 557				
"	2086	"	7.690 7.665	8133 8134	1277 1260	1277 1293	1290 1307	520 557				
"	2087	"	7.671 7.624	8135 8136	1277 1267	1313 1320	1327 1330	553 573				
"	2088	"	7.550 7.550	8137 8138	1280 1277	1333 1323	1350 1330	563 563				
"	2090	"	7.662 7.652	8139 8140	1263 1260	1323 1303	1330 1310	563 570				
"	2091	"	7.710 7.677	8141 8142	1293 1287	1320 1287	1330 1300	570 530				
W.E.H. experiment 1/4" Long tube from upper half of plate 8141 the lower half of which had frozen. 8143 soaked in H_2O 3 days before mixing 8144 not soaked				8143 8144	1863 1853	1807 1733	1923 1820	797 977	1740 1640	1807 1737	695 465	6 hour swelling - spread a little
W.E.H. Exp.			Soaked	8145	1567	1673	1730	640	1567	1643	738	
Dup of 8143 + 44			Plate #2 not.	8146	1393	1667	1713	913	1523	1643	930	

8143	1510	1647	763	
8144	1513	1653	1190	
8145	1410	1523	923	
8146	1400	1527	1043	

W.E.H. Exp. Dup. 8143-4 Plate #3	Soaked	8147	1617	1747	1800	683	1693	1757	741
	Not "	8148	1693	1610	1650	743	1497	1587	788
W.E.H. Exp. Dup. 8143-4 Plate #4	Soaked	8149	1813	1887	1950	713	1843	1977	645
	Not "	8150	1873	1827	1950	727	1760	1967	738
W.E.H. Exp. Dup. 8143-4 Plate #5	Soaked	8151	1827	1697	1847	1023	1800	1793	945
	Not "	8152	1780	1593	1643	963	1470	1577	1017
W.E.H. Exp. Dup. 8143-4 Plate #6	Soaked	8153	1817	1897	1938	690	1857	1983	791
	Not "	8154	1783	1967	1957	690	1843	1983	795
Lot #123 Li flake		7.520	8155	1213	1283	1320	530		
$Mn(OH)_2$ #1256		7.480	8156	1207	1250	1280	527		
$Mn(OH)_2$ 1963 Reg.		7.470	8157	1260	1320	1330	520		
		7.457	8158	1267	1343	1360	513		
" 2089 "		7.540	8159	1207	1327	1333	513		
		7.557	8160	1257	1343	1357	510		
" 2092 "		7.585	8161	1220	1280	1300	510		
		7.570	8162	1260	1330	1340	513		
" 2093 "		7.510	8163	1247	1303	1333	507		
		7.480	8164	1283	1360	1377	540		

8147	1580	1707	467	
48	1360	1487	807	
8149	1703	1927	637	
50	1620	1813	670	
8151	1497	1770	843	
52	1416	1533	930	
53	1717	2017	810	
54	1750	2083	980	

Ti(Est)$_2$	2094	Rg.	7.605 7.580	8165 8166	1267 1293	1297 1340	1307 1350	517 520				
"	2095	"	7.780 7.785	8167 8168	1223 1223	1320 1277	1330 1290	520 513				
"	2096	"	7.598 7.603	7169 7170	1277 1293	1330 1363	1340 1377	517 520				
"	2097	"	7.537 7.546	8171 8172	1220 1220	1293 1260	1307 1277	520 523				
"	2098	"	7.698 7.679	8173 8174	1237 1250	1280 1323	1290 1333	520 523				
"	2099	"	7.627 7.570	8175 8176	1250 1253	1370 1337	1380 1347	523 547				
"	2100	"	7.486 7.519	8177 8178	1247 1243	1323 1313	1333 1323	567 583				
"	2101	"	7.591 7.605	8179 8180	1290 1310	1320 1320	1337 1330	617 620				

Ni(OH)$_2$ 2102 Reg.	7.632 7.614	8181 8182	1283 1300	1297 1300	1310 1313	637 717			
" 2103 "	7.993 7.470	8183 8184	1257 1263	1267 1267	1280 1280	737 780			
" 2104 "	7.557 7.562	8185 8186	1297 1290	1273 1280	1287 1293	820 870			
" 2105 "	7.569 7.695	8187 8188	1270 1273	1267 1273	1280 1283	917 967			
Lot #1214 Ni flake Ni(OH)$_2$ #1256	7.525 7.560	8189 8190	1200 1202	1230 1233	1253 1260	443 473			
Ni(OH)$_2$ 2106 Reg.	7.618 7.600	8191 8192	1247 1273	1273 1290	1283 1300	653 623			
" 2107 "	7.600 7.580	8193 8194	1250 1233	1303 1263	1313 1273	607 523			
" 2108 "	7.600 7.590	8195 8196	1260 1283	1293 1333	1303 1350	527 523			

$Ni(OH)_2$	2109	Reg.	7.520 7.560	8197 8198	1223 1273	1250 1317	1263 1327	523 540	/		
"	2110	"	7.723 7.677	8199 8200	1240 1193	1327 1233	1340 1247	533 523	/		
"	2111	"	7.671 7.686	8201 8202	1207 1210	1280 1270	1297 1280	560 540	/		
"	2112	"	7.613 7.620	8203 8204	1273 1267	1313 757	1327 1303	547 550	Sick 7e's		
"	2113	"	7.866 7.852	8205 8206	1297 1260	1307 1283	317 1293	557 540	/		
"	2114	"	7.649 7.668	8207 8208	1247 1253	1277 1297	1287 1307	553 563	/		
"	2115	"	7.643 7.639	8209 8210	1253 1250	1297 1263	1307 1273	550 553	/		
"	2116	"	7.743 7.744	8211 8212	1283 1283	1307 1307	1320 1320	563 560	/		

Lot #125 Ni flake	7.530	8213	1133	1197	1237	440			
$Ni(CO)_4$ #1256	7.590	8214	1127	1157	1187	447			
Jones #813 $Ni(CO)_4$	6.938	8215	850	1126	1134	400			
Passed in 2 gm. cakes at 300 at.	6.960	8216	867	1127	1140	373			
Jones #815 $Ni(CO)_4$	6.756	8217	860	1087	1097	340			
300 atmos. pressure	6.730	8218	907	1100	1117	367			
Jones #818 $Ni(CO)_4$	6.510	8219	867						
300 atmos. pressure	6.530	8220	887						
Jones #816 $Ni(CO)_4$	6.731	8221	923						
300 atmos. pressure	6.690	8222	920						
Jones #819 $Ni(CO)_4$	6.379	8223	960						
300 atmos. pressure	6.386	8224	933						
Jones #830 $Ni(CO)_4$	7.233	8225	1140						
300 at.	7.245	8226	1140						
Jones #831 $Ni(CO)_4$	7.426	8227	1100						
300 at.	7.390	8228	1143						
Jones #833 $Ni(CO)_4$	7.560	8229	1163						
300 at.	7.521	8230	1123						

Na Jones folding.

Jones #826 $Ni(OH)_2$ 300 At.	6.933 6.951	8231 8232	1100 1067
Jones #827 $Ni(OH)_2$ 300 At.	7.183 7.230	8233 8234	1120 1123
Jones #832 $Ni(OH)_2$ 300 At	7.830 7.806	8235 8236	1093 1100
Jones #829 $Ni(OH)_2$ 300 At.	6.417 6.437	8237 8238	953 957
Lot #126 Ni flake $Ni(OH)_2$ 1256	7.410 7.601	8239 8240	1160 1157
$Ni(OH)_2$ 2118 Reg	7.704 7.703	8241 8242	1220 1233
" 2117 "	7.668 7.680	8243 8244	1163 1230
" 2119 "	7.750 7.741	8245 8246	1197 1197
" 2120 "	7.636 7.630	8247 8248	1247 1267

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Jones for Comp Reg

1250 1257	1300 1283	977 953	
	1290 1330	1300 1337	
	1313 1313	1320 1320	
	1263 1260	1280 1270	
	1323 1330	1330 1343	

Ti(OH)2	#2121	Reg.	7.749 7.750	8249 8250	1223 1247
"	2122	"	7.662 7.659	8251 8252	1217 1193
"	2123	"	7.702 7.720	8253 8254	1120 1163
"	2124	"	7.622 7.640	8255 8256	1187 1160
"	2125	"	7.705 7.743	8257 8258	1267 1267
"	2126	"	7.692 7.701	8259 8260	1200 1237
"	2127	"	7.665 7.660	8261 8262	1223 1240
"	2128	"	7.742 7.770	8263 8264	1193 1232
"	2129	"	7.658 7.678	8265 8266	1233 1210

10					
9	12				
1310	1320				
1287	1297				
1300	1310				
1263	1280				
1217	1230				
1297	1313				
1337	1370				
1263	1280				
1313	1330				
1313	1327				
1263	1270				
1287	1283				
1307	1320				
1260	1267				
1250	1268				
1297	1307				
1313	1323				
1243	1253				

18) 23100 (1283
18
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54
140
140

Ni(OH)$_2$	2130	Reg.	7.700 7.705	8267 8268	1243 1200	1250 1243	1317 1297		
"	2131	"	7.692 7.711	8269 8270	1270 1253	1337 1333	1350 1317		
"	2132	"	7.728 7.728	8271 8272	1240 1243	1297 1307	1300 1317		
"	2133	"	7.733 7.685	8273 8274	1240 1217	1307 1287	1317 1300		
"	2134	"	7.713 7.720	8275 8276	1247 1200	1280 1247	1290 1257		
"	2135	"	7.726 7.753	8277 8278	1163 1237	1263 1293	1247 1300		
"	2136	"	7.626 7.612	8279 8280	1190 1223	1250 1253	1297 1257		
"	2137	"	7.562 7.540	8281 8282	1230 1240	1273 1297	1243 1263		
Jones Ni(OH)$_2$ # 817 300 at.			6.700 6.740	8283 8284	1	1137 1167	1150 1180	390 403	1

Jones $Ti(OH)_2$ #823. 300 at.	6.515 6.503	8285 8286	910 893	1093 1047	1107 1053	403 387		
" 825 300 at.	6.938 6.910	8287 8288	1130 1120	1277 1157	1260 1170	393 373		
" 828 300 at.	6.590 6.450	8289 8290	950 960	1097 1110	1110 1117	390 387		
" 836 300 at.	7.996 7.993	8291 8292	1097 1057	1110 1143	1123 1173	420 417		
" 835 300 at.	7.461 7.510	8293 8294	1113 1127	1213 1187	1223 1207	443 423		
" 836 300 at.	7.299 7.369	8295 8296	1153 1147	1213 1223	1230 1247	457 453		
" 837 300 at.	7.000 7.060	8297 8298	1147 1160	1157 1190	1177 1213	560 623		
" 838 300 at.	7.278 7.277	8299 8300	1163 1150	1207 1190	1233 1223	640 654		
$Ti(OH)_2$ #2138 Reg.	7.662 7.610	8301 8302	1287 1287	1273 1263	1283 1273	517 520		

Ni(CO4)2	2139	Reg.	7.648	8303	1283		1267	1250	520
			7.632	8304	1237		1227	1240	487
"	2140	"	7.630	8305	1260		1240	1250	510
			7.605	8306	1247		1230	1240	490
"	2141	"	7.660	8307	1240		1230	1247	463
			7.669	8308	1217		1217	1223	483
"	2142	"	7.710	8309	1273		1257	1267	470
			7.690	8310	1263		1243	1253	470
"	2143	"	7.705	8311	1300		1260	1267	467
			7.702	8312	1277		1243	1253	460
"	2144	"	7.682	8313	1270		1253	1260	473
			7.670	8314	1267		1243	1253	470
"	2145	"	7.691	8315	1237		1220	1230	470
			7.685	8316	1240		1263	1277	483
"	2146	"	7.660	8317	1237		1258	1257	463
			7.640	8318	1230		1240	1250	507
"	2147	"	7.600	8319	1263		1247	1257	520
			7.561	8320	1257		1247	1257	517

$Ni(OOH)_2$	2148	Reg.	7.580 7.592	8321 8322	1263 1217
"	2149	"	7.615 7.625	8323 8324	1197 1197
"	2150	"	7.640 7.672	8325 8326	1257 1273
"	2151	"	7.681 7.690	8327 8328	1263 1283
"	2152	"	7.580 7.592	8329 8330	1263 1220
"	2153	"	7.630 7.621	8331 8332	1243 1213
"	2154	"	7.779 .	8333 8334	1280 1247
"	2155	"	7.775 7.780	8335 8336	1277 1277
"	2156	"	7.602 7.593	8337 8338	1223 1227

10	1/2	H	
1280 1213	1243 1223	477 500	
1177 1197	1187 1213	470 500	
1240 1243	1253 1257	520 564	
1240 1243	1247 1257	587 640	
1237 1217	1243 1223	687 643	
1230 1200	1240 1213	650 697	
1353 1363	1367 1320	463 483	
1357 1347	1370 1360	467 464	
1397 1417	1410 1437	547 580	

$Tu(OH)_2$	2157	Reg.	7.725	8339	1247	1313	1330	487				
			7.730	8340	1220	1293	1303	490				
"	2158	"	7.577	8341	1170	1297	1313	493				
			7.583	8342	1227	1303	1317	493				
"	2159	"	7.550	8343	1270	1413	1430	540				
			7.563	8344	1277	1403	1423	523				
"	2160	"	7.599	8345	1213	1280	1297	493				
			7.580	8346	1237	1330	1343	493				
"	2161	"	7.682	8347	1197	1307	1323	493				
			7.662	8348	1247	1333	1347	490				
"	2162	"	7.618	8349	1247	1357	1370	493				
			7.630	8350	1247	1300	1320	497				
"	2163	"	7.773	8351	1280	1350	1364	503				
			7.781	8352	1250	1250	1273	490				
"	2164	"	7.720	8353	1220	1270	1290	490				
			7.769	8354	1237	1323	1330	507				
"	2165	"	7.660	8355	1220	1303	1313	503				
			7.660	8356	1250	1310	1327	503				

Rigs

		8357	1260	1	1287	1317	503				
		8358	1260		1327	1318	497				
		8359	1253		1343	1357	583				
		8360	1237		1310	1323	597				
		8361	1267		1243	1270	690 5				
		8362	1253		1313	1333	723 1				
		8363	1253		1300	1317	753 8				
		8364	1247		1313	1323	870 1				
Goldstein 824	6497	8365	1007		1190	1213	423				
	6492	8366	1010		1180	1193	423				
pressed 300											
Goldstein 840.	7656	8367	1017		1247	1293	433				
	7615	8368	1103		1233	1260	440				
pressed 300											
Goldstein - 841.		8369	1087		1220	1243	450	1250	1283	570	
pressed 300	7910	8370	1180		1230	1270	470	1277	1327	567	
	7900										
Goldstein 842	7470	8371	1090		1207	1240	433	1243	1317	557	
	7452	8372	1100		1193	1223	447	1257	1277	570	
pressed 300											

Gold dr 843	7430	8373	1107	1230	1263	420	1257	1310	597		
Pressed 300	7440	8374	1120	1263	1287	463	1307	1437	623		
Lot 127 flake		8375	1183	1303	1322	453					
4.3 — 27 [illegible] -	7550	8376	1250	1293	1323	420					
	7530										
2170 Reg	7600	8377	1257	1297	1297	693					
	7635 —	8378	1270	1380	1380	627					
2171 Reg	7640	8379	1247	1310	1317	623					
	7640	8380	1230	1260	1313	600					
Strontium sulfate alone with flake 3.8		8381	0	0	0	0					
	385-564	8382	0	0	0	0					
pressed 300	8870 8880										
Dup but only 1/2 the amount quepto pressed		8383	0	0	.7	0					
	9405	8384	0	0	.7	0					
300 pressed	9575										
Dup but only 1/2 amount 5-50, & 1/2 amount flake -	8970	8385	0	0	0	0					
	8980	8386	0	0	0	0					
1/8 tube 1981 no flake		8387	840	1177	1180	417	1187	1/2 1190	457		
4 m one pid —		8388	873	1250	1233	417	1253	1257	480		
Long tubes —											

bad beat pressed [illegible]

8387	1197	1203	610	300 1183	1193	627
8368	1257	1260	610	1527	1567	1070

Aent swollen zeros flaw
replit 2 places
Nofalke

1197	117	777	300 1037	1060	993		
1333	1458	1000	1307	1443	967		

bad text flaw
repit 2 places
bad swollen flaw
repit 2 places

1/8 tubes Lunded 2 dumps improved + one dump flat of tubes		8389 8390	1937 1850		1690 1657	1777 1707	613 567	1563 1543	1643 1570	500 453
tube 1/16" flat and non uniform thin central — dirty 3 thin rolls		8391 8392 8393 8394	62 22 12 133		200 97 43 247	200 97 43 247	177 83 53 233			
Goldfolum 839 Processed	7783 7662	8395 8396	1097 1060		1243 1203	1270 1233	510 493	1243 1223	1357 1300	560 457
Goldfolum 844 Processed	6700 6700	8397 8398	1123 1110		1247 1217	1263 1233	407 410	1240 1197	1300 1267	420 400
Goldfolum 845 Processed	7380 7470	8399 8400	1107 1113		1227 1253	1250 1253	443 433	1267 1267	1333 1323	460 460
Goldfolum 846 Processed	7343 7340	8401 8402	1147 1160		1350 1330	1370 1350	463 403	1363 1330	1427 1380	463 463
Goldfolum 847 processed 300	6350 6447	8403 8404	1073 1073		1177 1193	1190 1217	403 430			
Reg 2172	7740 7720	8405 8406	1257 1273		1290 1263	1293 1270	907 883			
Reg 2173	7695 7600	8407 8408	1243 1257		1260 1280	1267 1303	797 743			

Seam flared — Part —

Part seam flared

				200		
8389	1477	1543	637	1463	1467	663
8390	1470	1503	497	1413	1447	657

				200		
8401	1400	1513	650	1210	1447	717
8402	1320	1430	470	1250	1457	730

1350	1430	733	1420	1500	883	
1330	1380	727	1357	1407	818	

1103	1273	723	
1133	1290	763	

Req 2174	7712 7770	8409 8410	1307 1303	1330 1343	1337 1350	713 713
Req 2175	7700 7660	8411 8412	1287 1263	1323 1347	1327 1453	653 690
Req 2176	7595 7610	8413 8414	1273 1253	1317 1303	1323 1310	667 653
Req 2177	7623 7690	8415 8416	1270 1270	1350 1333	1357 1363	653 647
Req 2178	7390 7348	8417 8418	1203 1210	1397 1297	1403 1297	710 627
Req 2179	7747 7760	8419 8420	1273 1290	1383 1367	1390 1373	713 683
Req 2180	7640 7660	8421 8422	1227 1220	1307 1247	1310 1317	670 643
Req 2181	7688 7615	8423 8424	1250 1250	1320 1287	1327 1267	668 643
Req 2182	7605 7675	8425 8426	1247 1237	1310 1307	1313 1310	667 637

Req 2183	7840 7812	8427 8428	1293 1280	1371 1367	1377 1380	633 634
Req 2184	7700 7734	8429 8430	1263 1280	1337 1397	1347 1407	634 670
Req 2185	7482 7451	8431 8432	1247 1237	1353 1326	1363 1323	647 648
Req 2186	7550 7527	8433 8434	1260 1233	1350 1290	1357 1293	646 630
Req 2187	7580 7797	8435 8436	1247 1223	1340	1347	630
128 flake 1256 – 2239 4.3	7540 7540	8437 8438	1230 1197	1343 1313	1363 1330	493 510
Lot 129 2239 4.0	7400 7407	8439 8440	1220 1233	1310 1330	1327 1350	554 610
Goldsby special pressure	6395 6543	8441 8442	1000 1053	1177 1223	1190 1247	556 704

RL Expt 1802	7760 7745	8443 8444	1223 1197	1333 1313	1347 1327	493 493				
RL Expt 1802 B	7980 8020	8445 8446	1297 1253	1327 1340	1337 1350	533 520				
Goldstein 857 pressed 300	7625 7580	8447 8448	1130 1107	1317 1307	1330 1327	423 423	1267 1267	1320 1313	250 283	
Goldstein 858 pressed 300	7330 7305	8449 8450	1167 1177	1279 1300	1290 1320	417 420	1347 1330	1390 1380	383 283	
Goldstein 859 300 atmos	6970 6960	8451 8452	1117 1163	1253 1320	1263 1330	420 423	1287 1327	1353 1373	427 453	
Reg tubes alone Horse Canter whole size tubes		8453 8454 8455 8456	1165 1210 1175 1189	1270 1280 1235 1240	1290 1310 1355 1265	453 457 457 467				
Reg 2188	7821 7870	8457 8458	1250 1220	1277 1243	1287 1250	543 533				
Reg 2189	7880 7810	8459 8460	1287 1257	1313 1283	1320 1293	603 545				

8449	1353	1460	430	1267	1500	680	1120	1333	760	
8450	1333	1440	443	1297	1467	683	1147	1287	720	
8451	1243	1390	420	1267	1417	703	1100	1267	720	
52	1337	1463	397	1250	1550	707	1043	1253	767	

Req 2190	7850 7830	8461 8462	1290 1280	1297 1287	1303 1293	550 540			
Req 2191	7910 7892	8463 8464	1283 1280	1297 1310	1303 1317	560 590			
Req 2192	7795 7700	8465 8466	1247 1233	1290 1273	1297 1283	603 633			
Req 2193	7645 7683	8467 8468	1263 1243	1297 1253	1307 1267	663 693			
Req 2194	7540 7585	8469 8470	1217 1243	1247 1263	1253 1270	720 754			
Req 2195	7816 7930	8471 8472	1297 1300	1293 1287	1303 1297	760 817			
Gold Rod 860 not proven screw out of Roll wrong thickness not 3/4 ok	7812 7773	8473 8474	1200 1223	1350 1270	1370 1303	460 417	1483 1307	1557 1343	590 540
Gold Letter 861 not proven worked second no 860	7580 7535	8475 8476	1200 1223	1267 1327	1290 1350	417 400	1297 1330	1343 1380	483 513

S smaller
Split 2 pieces

				200		
8473	1347	1400	827	1183	1243	647
8474	1243	1380	680	1200	1327	673
8475	1297	1373	590	1177	1377	570
8476	1247	1410	660	1243	1397	603

slightly mottled
spelt 3 places

1090	1197	867	
1000	1180	733	
1067	1247	697	
1073	1267	760	

Note that

Co

Calcium phosphate only + flake — 300 at. 6806, 6784	8477 8478		0 0	0 0	0 0			
Barium phosphate + flake only 300 at — 8930, 8870	8479 8480		0 0	0 0	0 0			
Strontium phosphate + flake only 300 at — 6863, 6870	8481 8482		0 0	0 0	0 0			
Calcium Carbonate + flake only 300 at 6100, 6139	8483 8484		17 17	20 20	17 13	30 30	33 33	47 43
Barium Carb + flake only 8920, 8943	8485 8486	3 3	30 33	37 43	23 23	60 70	70 80	47 43
Strontium Carb only + flake 7032, 7040	8487 8488	3 1.7	20 17	23 20	13 10	33 30	37 33	43 47
Calcium Borate + flake 4785, 4605	8489 8490	20 20	27 27.7	28 28.5	27 27	20 20	23 23	60 57
Barium Borate + flake 5385, 5340	8491 8492	0 0	0 0	0 0	0 0			
Strontium Borate 5300, 5020	8493 8494	10 8	1 1	3 3	7 7			

Goldsborough 860-61 fence (These high heads are Bell grass fence) pressed 2" Cake 3/16 thick - 7600		8495 ~~8496~~	1163
Req 2196	7765 7733	8498 8499	1293 1323
Req 2197	7920 7912	8498 8499	1313 1330
Req 2198	7760 7755	8500 8501	1310 1313
Req 2199	7730 7820	8502 8503	1327 1323
Req 2200	7825 7860	8504 8505	1260 1253
Req 2201	7630 7580	8506 8507	1233 1217
Req 2202	7350 7360	8508 8509	1247 1253
Req 2203	7620 7645	8510 8511	1250 1270

8495 1293 - 1550 — 157 1/2

	1293	1310	773	1317	1367	567
	1305 1287	1313 1323	400 477			
	1307 1323	1317 1333	420 437			
	1313 1330	1320 1343	477 497			
	1320 1337	1327 1343	490 490			
	1347 1310	1373 1317	557 497			
	1260 1223	1270 1240	470 433			
	1287 1267	1297 1273	450 453			
	1307 1250	1317 1257	483 457			

16 | 20873 (1304
16 6
48 5
73 4

Req 2203	7620 7640	8510 8511	1250 1270							
Jungle Trong & Yellow - East Coast	14815	8512	17		37	38	20	30	33	53
Req 2204	7600 7620	8513 8514	1257 1277		1263 1300	1270 1303	473 460			
Req 2205	7633 7630	8515 8516	1223 1267		1243 1317	1250 1327	450 447			
Req 2206	7650 7600	8517 8518	1290 1233		1303 1290	1310 1300	437 458			
Req 2207	7735 7710	8519 8520	1287 1267		1357 1270	1369 1273	460 430			
Req 2208	7820 7780	8521 8522	1253 1260		1283 1273	1297 1280	470 417			
Req 2209	7755 7740	523 8524	1290 1273		1310 1307	1317 1313	540 520			
Req 2210	7705 7702	8525 8526	1253 1253		1310 1290	1320 1303	537 524			
Req 2211	7625 7570	8527 8528	1257 1200		1237 1267	1253 1277	540 550			

Notebook, N-12-01-15.2

Lot 130 Fisher 23.7	4 — 7448 7426	8529 8530	1203 1200	1313 1320	1333 1350	517 517	
Lot 131 Fisher 23.7	4.5 7542 7520	8531 8532	1157 1203	1233 1293	1263 1320	460 460	
Reg 2212	7310 7390	8533 8534	1133 1200	1240 1270	1247 1280	583 583	
Reg 2213	7360 7380	8535 8536	1193 1260	1260 1263	1263 1267	547 570	
Reg 2214	7410 7457	8537 8538	1263 1270	1293 1303	1307 1313	537 530	
Reg 2215	7470 7490	8539 8540	1193 1273	1270 1330	1280 1337	530 543	
Reg 2216	7370 7400	8541 8542	1190 1237	1227 1253	1227 1260	567 560	
Reg 2217	7357 7410	8543 8544	1213 1253	1250 1290	1257 1293	567 590	
Reg 2218	7340 7342	8545 8546	1170 1257	1227 1260	1233 1293	593 583	

Req 2219	7440	8547	1210	1267	1273	590
	7523	8548	1233	1277	1283	600
Req 2220	7651	8549	1263	1313	1353	503
	7692	8550	1247	1323	1330	533
Req 2221	7627	8551	1257	1323	1327	510
	7670	8552	1257	1327	1333	510
Req 2222	7600	8553	1283	1397	1407	517
	7605	8554	1287	1357	1367	523
Req 2223	7695	8555	1270	1300	1310	500
	7701	8556	1260	1347	1357	507
Req 2224	7585	8557	1257	1333	1347	507
	7590	8558	1263	1377	1390	537
Req 2225	7509	8559	1250	1370	1383	553
	7491	8560	1257	1293	1307	523
Req 2226	7554	8561	1253	1343	1350	500
	7516	8562	1247	1317	1337	500

Req 2225	7772 7780	8563 8564	1320 1280	1407 1363	1420 1373	520 527
Req 2227	7553 7575	8565 8566	1243 1233	1377 1368	1343 1313	513 520
Req 2229	7670 7688	8567 8568	1230 1240	1303 1333	1317 1347	523 517
Req 2230	7540 7620	8569 8570	1237 1240	1329 1308	1330 1333	503 6[illegible]4
Req 2231	7650 7660	8571 8572	1210 1227	1263 1290	1270 1257	373 383
Req 2232	7520 7560	8573 8574	1223 1257	1277 1273	1287 1283	383 397
Req 2233	7400 7409	8575 8576	1183 1183	1213 1257	1223 1267	390 430
Req 2235	7555 7582	8577 8578	1233 1243	1260 1320	1270 1333	470 498
Metallic Zinc dust see Lotte —		8579 8580		[illegible] [illegible]	[illegible] [illegible]	

Ferment Copper 3.5 filtrate 20 Cu	12155 12117	8581 8582					
Ra 1488 Expt	7459 7527	8583 8584	997 1087	1160 1200	1170 1213	483 460	
Ra 1485 Expt	7641 7650	8585 8586	1117 1090	1230 1193	1247 1207	460 413	
Ra 1485	7670 7670	8587 8588	1113 1140	1177 1190	1190 1200	490 460	
Ra 1487	6630 6618	8589 8590	1200 1203	1173 1237	1190 1247	459 467	
Reg 2234	7595 7583	8591 8592	1220 1287	1260 1327	1270 1337	490 457	
Reg 2236	7345 7460	8593 8594	1253 1260	1257 1277	1263 1287	450 451	
Reg 2237	7905 7840	8595 8596	1323 1327	1300 1347	1307 1353	430 480	
Reg 2238	7690 7663	8597 8598	1257 1280	1240 1287	1247 1290	420 455	

Reg 2239	7590 7555	8599 8600	1270 1283	1300 1287	1307 1290	480 467	
Reg 2240	7720 7572	8601 8602	1250 1273	1267 1277	1277 1287	480 463	
Reg 2241	7420 7400	8603 8604	1170 1187	1167 1223	1170 1230	333 457	
Reg 2242	7663 7652	8605 8606	1240 1247	1267 1297	1277 1303	450 457	
Reg 2243	7510 7516	8607 8608 8609 8610	1558 1442 1608 1550				
Reg 2244	7696 7646	8611 8612	1263 1243	1298 1263	1300 1280	450 450	
Reg 2245	7555 7522	8613 8614	1157 1247	1323 1240	1333 1257	423 417	
		8615 8616	1243 1250	1297 1303	1303 1310	417 407	

Reg 2243 letters could not be found in Cabin, from now Reg. 2243 record 1/6 Hook

Reg 2246	7520 7748	8617 8618	1333 1330	1423 1363	1433 1370	487 427				
Reg 2247	7717 7652	8619 8620	1263 1263	1293 1293	1307 1303	493 443				
Reg 2248	7610 7535	8621 8622	1255 1257	1317 1293	1320 1300	490 487				
Reg 2249 —	7520 7510	8623 8624	1260 1240	1287 1250	1293 1253	587 617				
Reg 2251	7620 7625	8625 8626	1253 1277	1267 1287	1283 1293	623 723				
Reserve [illegible] — 3.8 Cubic ft 23. Sotkinsoy 20 CO [illegible]	7970 7970	8627 8628	37 37	53 50	57 53	47 47				
Geochem 862 pressed 300 at	7910 7901	8629 8630	1110 1110	1223 1257	1253 1290	463 527	1283 1300	1317 1360	393 470	
Geochem 863 300 atmos	7639 7620	8631 8632	1127 1127	1267 1283	1310 1313	530 647	1300 1313	1373 1347	500 640	
Geochem 864 300 atmos	7535 7525	8633 8634	1040 1103	1303 1277	1323 1300	287 327				

	150			200			
8629	1300	1373	713	1263	1373	753	
8630	1310	1427	700	1153	1427	717	
8631	1250	1443	717	1230	1403	760	
8632	1340	1407	763	1330	1380	823	

Gal Chloride 866	7355	8635	1130	1317	1340	463				
300 ml water	7365	8636	1157	1250	1447	360				
Gal Chloride 872	7490	8637	1160	1390	1413	457	1313	1517	637	
4½% Cobalt ...	7450	8638	1150	1450	1473	473	1323	1615	600	
Gal Chloride 877	7492	8639	1167	1210	1240	487				
300 ml water	7414	8640	1157	1233	1253	353				
Gal Chloride 878	7605	8641	1127	1243	1267	370				
300 ml water	7610	8642	1143	1210	1237	300				
132 flake	7540	8643	1230	1307	1323	317				
4 f 23.9 grams	7521	8644	1217	1263	1280	333				
Reg Indium	7143	8645	1157							
to go with the two following Indium	7195	8646	1210							
Zinc Metal chips	13070	8647	~~1200~~	10						
3 g f 26.7 Zn	13420	8648	~~1200~~							
RA 1482 Eppm f	7320	8649		1333	1370	757	1490	1590	903	
Bismuth Metal.	7247	8650		1453	1473	727	1543	1643	923	
Barium chromate	7349	8651	1.0	0	0					
$PbN(SbO_3)_2$	7410	8652	1.5	0	0					

	100			150			
8637	1177	1463	453	1090	1440	767	
8638	600	1510	467	1443	1587	757	

	350			3 times [illegible]		400	
8637	1173	1387	780	1307	1410	977	1143	517
8638	1027	1257	637	1223	1333	973	1183	420

	360			3 times [illegible]	
8649	1123	1370	1080	1373	
8650	1127	1437	937	1467	

	160			210			
8649	1400	1590	667	1477	1610	1083	
8650	1417	1747	680	1427	1650	1117	

	460				
8649	850	1460	1017		
8650	933	1253	1100		

New 7's + new spider suit in water change

	150							
	3 [illegible]		200	52	14			
1417	1477	1327	1457	820	1230	1390	650
1413	1467	1323	1433	800	1237	1353	627

	450		
863	947	823	
820	917	777	

	260			310				
530	1563	1107	1387	1473	1040	1063	1336	163
460	537	1173	1273	1443	1072	1067	1437	400

Strontium chlorate	6825	8653	1.5						
	6780	8654	1.5						
Calcium chlorate	5669	8655	1.5						
	5658	8656	1.5						
Calcium bromate	6023	8657	0						
	6008	8658	0						
300 at									
Barium chlorate	8250	8659	0						
	8279	8660	0						
300 at,									
Strontium chromate	8240	8661	0						
	8210	8662	0						
300 at									
Sodium Metavanadate	7440	8663	0	33	37	40	163	140	140
	7417	8664	0	37	40	40	157	167	67
Strontium Sulphate	4125	8665	0	0	0	3	0	3	0
	7205	8666	0	17	30	3	0		
300 at									
Calcium Sulphate	6405	8667	0	0					
		8668	0	0					
300 at	6301			0					
K Sulphate	6060	8669	0	0					
300 at	6140	8670	0	0					

0 Molecular

Zinc [illegible]	8671	0	0	0	0				
3 mo at 7325	8672	0							
[illegible] 5707	8673	0	0	0	0				
5760	8674	0							
K Silicofluoride 6420	8675	0	0	0					
6420	8676	0							
3 mo at									
Barium [illegible]	8677		23	30	27	109	120	107	
10945	8678	0	23	33	10	93	113	103	
10940									
Calcium Molybdate	8679		13	14.5	13				
7630	8680		13	14.5	10				
3 mo at, 7620									
Sr Mo 8520	8681		23	24.5	17				
8430	82		23	24.5	17				
Ba Tellurate	8683		0	0	7				
6910	8684		0	0	7				
6945									
K phosphomolybdate	8685		23	24	37				
7262	8686		20	24	17				
7280									

K Panzerglas	6550	8687		17	18.5	37		
	6650	8688		20	21.5	37		
Sr Wurfgrauf	10257	8689		30	31.5	33		
	10350	8690		30	31.5	33		
Ca Selenite	6500	8691		27	28.5	40		
	6710	8692		30	31.5	23		
Sr Selenite	7160	8693		13	14.5	23		
	7250	8694		13	14.5	23		
Ba Selenite	9250	8695		7	8.5	7		
	9309	8696		0	0	3		
Ba Jungfrau	11175	8697		27	28.5	7		
	11100	8698		33	34.5	3		
Ca Jungfrau	9520	8699	7	13	27	17		
	9647	8700	7	23	27	17		
Gold alum 86%	7758	8701	1050	1263	1287	723		
19.7% fine	7701	8702	1077	1220	1243	530		

Ca Jungfrau

Golden 885 in a Co 4% 15 degree	7363 7320	8703 8704	990 1007	1183 1287	1200 1310	547 503				
dat 133 flake 4.4	7530 7530	8705 8706	1173 1183	1243 1293	1253 1307	457 467				
134 flake 4.	7490 7555	8707 8708	1177 1177	1260 1293	1270 1307	417 413				
135 flake 43	7517 7590	8709 8710	1157 1150	1217 1263	1227 1323	423 450				
RA 1488 Exp't 300 at.	7600 7645	8711 8712	1057 1050	1300 1223	1317 1240	503 600	1260 1223	1345 1287	693 627	
RA 1489 Exp't 85% thru 180 fr. mesh 300 at	7558 7572	8713 8714	1040 1060	1260 1270	1280 1300	637 660	1283 1290	1323 1333	450 457	
RA 1496 Exp't 94% thru 180 300 at	7525 7570	8715 8716	950 907	1110 1110	1127 1127	680 707	1160 1130	1193 1180	427 647	
RA 1499 Exp't	7392 7305	8717 8718	953 927	1057 1077	1060 1080	437 450	1097 1127	1120 1150	603 557	

				200	1/2	ft	
					5 Zwischen Sprit 1 pl 200		
8711	1250 1267	1367	583	1183	1347	747	
8712	1197	1323	580	1087	1307	733	
8713	1250	1370	577	1197	1350	897	
8714	1267	1367	550	1243	1390	800	
8715	1160	1260	573	1127	1223	767	
8716	1147	1203	570	1080	1200	717	
8717	1130	1157	573	1163	1197	717	
8718	1153	1177	570	1133	1203	687	

Wind out

Ra 1500 Expt 29% Non 180	7424 7413	8719 8720	1123 1153	1430 1353	1463 1370	723 553	100 1463 1387	1530 1660	703 703	S	Dr	
Ra 1524 Expt	7680 7512	8721 8722	1207 1183	1363 1343	1380 1353	423 363	1393 1353	1660 1633	463 607			
Req 2250	7500 7442	8723 8724	1223 1237	1307 1330	1317 1337	647 630						
Req 2252	7430 7407	8725 8726	1243 1217	1323 1337	1330 1343	610 590		Kewt + put in				
Req 2253	7519 7595	8727 8728	1163 1027	1223 1367	1237 1343	557 773						
Req 2254	7660 7660	8729 8730	1240 1230	1100 1327	1210 1330	580 520						
Req 2255	7585 7543	8731 8732	1207 1233	1327 1317	1330 1327	537 540						
Req 2256	7525 7520	8733 8734	1247 1247	1430 1327	1440 1330	577 587						

	150			200	V2	H
8719	1223	1577	713	1243	1450	793
8720	1293	1367	707	1227	1400	677
8721	1350	1473	713	1230	1517	777
8722	1243	1487	613	1310	1443	740

250	V2	H	
1197	1320	747	
1193	1323	800	
1200	1347	677	
1200	1307	650	

Req 2257	7370 7365	8735 8736	1197 1203	1290 1280	1297 1287	517 493	
Req 2258	7472 7475	8737 8738	1233 1227	1360 1343	1367 1353	497 580	
Req 2259	7450 7410	8739 8740	1223 1227	1327 1350	1333 1360	510 537	
Req 2260	7572 7530	8741 8742	1247 1247	1383 1333	1393 1340	564 537	
Req 2261	7557 7550	8743 8744	1260 1240	1370 1360	1377 1367	550 530	
Req 2262	7568 7587	8745 8746	1254 1243	1370 1377	1377 1383	543 540	
Req 2263	7617 7605	8747 8748	1220 1230	1277 1450	1287 1463	497 587	
Req 2264	7632 7587	8749 8750	1240 1203	1363 1317	1373 1323	510 552	

Req 2265	7450 7413	8751 8752	1217 1187	1330 1293	1337 1300	563 543	
Req 2266	7577 7566	8753 8754	1223 1220	1317 1350	1327 1360	543 540	
Ra 1490 Expt pressed 300 atmos	7750 7570	8755 8756	1027 990	1277 1163	1317 1213	480 340	
Ra 1491 Expt 300 atmos	7895 7820	8757 8758	1033 990	1243 1233	1267 1247	500 603	
Ra 1492 Expt 300 atmos	7567 7572	8759 8760	1130 1117	1357 1395	1390 1487	687 693	
Ra 1497 Expt 300 atmos	7851 7800	8761 8762	982 1007	1237 1237	1257 1257	503 524	
Long tubes recovered flasks –		8763 64 65 66 67 68					

		8769		
		70		
		71		
		72		
		73		
		74		
Barium Uranate	8660	8775	1.5	23
	8630	8776	1.5	20
Calcium Uranate	10070	8777	1.5	
	10170	8778	1.5	
300 atmos				
Strontium Uranate		8779	1.5	all below
	8120	8780	1.5	20
	7960			
Barium Chromate		8781	1.5	
	8915	8782	1.5	
	8930			
Calcium Chromate		8783	1.5	
	6950	8784	1.5	
300 atmos	6885			
Strontium Chromate		8785	0	
	8267	8786	0	
	8270			

Calcium Vanadate 5700 5780	8787 8788	0 0					
Meta – Strontium Vanadinite 7070 6900 300 atoms	8789 8790	0 0					
Cadmium Vanadinite Meta 8085 8303 300 at	8791 8792	1.5 1.5					
Nickel Meta Vanadate 6155 6147 300 at	8793 8794	197 197	107 103	110 110	137 133		Ent
Copper Meta Vanadate 5585 5627	8795 8796	17 13	17				
Uranium Hydroxide 75% Nickel Hydrox 25% 9670 9700	8797 8798	153 147	323 327	330 333	210 210		Ent
Uranium Hydrox 75% Bismuth Hydrox 25% 11515 11805	8799 8800	3 3	87 87	110 110	37 37		Ent

all below 20

Uranium Hydrox 10732 10705 300 ap	8801 8802	7 7									
Uranium Hydrox 75% Cobbolt " 25%	8803 8804	60 53	90 67	110 90	93 97						
Thallium Iodide 17300 17203	8805 8806	0 0				all 8800 20					
Iron Vanadate 16027 16380	8807 8808	0 0									
Tungsten Bronze 16380	8809	7									
Lot 136 flake 7238 7284 4.1	8810 8811	1043 1027	983 1043	1090 1103	397 410	820 1077	907 1157	573 577			
Lot 137 flake 7320 7365 4.3	8812 8813	1073 1110	1270 1257	1317 1280	527 463						
Lot 138 flake 7247 7296 4.2	8814 8815	1143 1138	1290 1077	1320 1307	467 507						

8810	767	497	650
11	990	1097	650

Lot 139 flake 4.2	7208 7206	8816 8817	1130 1080	1290 1197	1320 1230	523 493					
Recovered flake 299 Dump Longtube	11220-	8818	1696	[illegible]	[illegible]	[illegible]	[illegible]				
RA Expt 1498	7587 7513	8819 8820	837 850	980 1090	1017 1177	407 507					
RA Expt 1501-	7505- 7453-	8821 8822	1074 1063	1247 1333	1253 1373	460 460	100 1277 1300	1303 1330	577 603		
RA Expt 1502 Whole's	7482 X 7420	8823 8824	1133 1150	1350 1393	1360 1410	447 483	1370 1400	1393 1667	643 667		
RA Expt 1503 pressed	7134 7109	8825 8826	983 990	1083 1057	1123 1087	430 397					
RA Expt 1520-	7400 7407	8827 8828	1067 1027	1267 1250	1290 1253	437 217	5 1283 1250	1330 1250	683 520		
RA Expt 1521	7150 7159	8829 8830	923 793	900 863	923 887	460 20					
RA Expt 1522 pressed —	6520 6447	8831 8832	1080 1083	1210 1193	1240 1223	390 393					

8821	1243	1320	643	1157	1283	687	1030	1133	547					
8822	1160	1400	653	1163	1353	660	983	1133	580					
8823	1373	1437	643	1267	1450	697	1213	1260	583	1123	1250	660		
8824	1373	1467	640	1200	1433	687	1043	1200	610	973	1187	677		

Ra Expt 1523	7398 7360	8833 8834	1033 1013	1167 1197	1177 1203	437 20				
Ra Expt 1525 pressed	7747 7740	8835 8836	1093 1153	1233 1303	1297 1363	523 670				
Ra Expt 1526 pressed	7495 7490	8837 8838	917 1010	1150 1230	1170 1253	493 517				
Ra Expt 1528 pressed	7600 7612	8839 8840	1017 1037	1220 1217	1240 1237	463 480	1237 1270	1290 1333	580 580	
Ra Expt 1529 pressed	7445 7330	8841 8842	547 187	790 280	497 287	383 370				
Ra Expt 1530 pressed	7154 7155	8843 8844	367 727	497 1027	503 1040	340 510				
Ra Expt pressed	7441 7480	8845 8846	943 967	1253 1273	1277 1253	577 457	1283 1170	1330 1273	650 593	
Ra Expt 1533 pressed	7473 7497	8847 8848	937 990	1223 400	1243 413	470 333				
Ra Expt pressed	7644 7740	8849 8850	1040 1057	1227 1273	1260 1293	450 517	1237 1287	1317 1347	587 650	

8839	1197	1290	650	
8840	1173	1293	717	
8845	1243	1353	750	
8846	1090	1247	653	
8849	1197	1303	757	
8850	1243	1357	753	

Re Expt 1535 pressed	7787 7770	8851 8852	1037 1120	1260 1237	1233 1263	503 507	1303 1293	1393 1367	667 663	
Re Expt 1537 pressed	7440 7417	8853 8854	1020 1003	1223 1307	1243 1330	397 743	1237 1270	1283 1410	653 733	
Lot 140 flake 42	7214 7252	8855 8856	1183 1157	1297 1303	1307 1313	620 693				
Req 2267	7525 7508	8857 8858	1280 1263	1277 1280	1263 1283	597 560				
Req 2268	7440 7411	8859 8860	1110 1220	1220 1280	1227 1287	520 513				
Req 2269	7830 7817	8861 8862	1257 1193	1317 1257	1323 1253	523 483				
Req 2270	7752 7796	8863 8864	1237 1247	1260 1287	1267 1293	517 517				
Req 2271	7560 7608	8865 8866	1173 1190	1207 1240	1217 1250	497 513				
Req 2272	7660 7577	8867 8868	1223 1237	1490 1317	1577 1323	500 580				

8851	1177	323	753
8852	1253	1373	753
8853	1220	1317	920 S
8854	1317	1397	800.

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Req 2273	7405 7453	8869 8870	1160 1170	1090 1227	1107 1233	523 547
Req 2274	7597 7590	8871 8872	1207 1240	1263 1290	1270 1297	587 627
Req 2275	7482 7460	8873 8874	1200 1193	1257 1033	1257 1133	580 533
Req 2276	7580 7550	8875 8876	1213 1180	1323 1253	1330 1260	555 530
Req 2277	7573 7520	8877 8878	1210 1233	1257 1247	1260 1253	500 487
Req 2278	7530 7560	8879 8880	1197 1200	1250 1267	1257 1277	497 523
Req 2279	7819 7816	8881 8882	1163 1183	1310 1230	1320 1237	607 593
Req 2280	7705 7681	8883 8884	1203 1230	1237 1267	1240 1293	610 5329
Req 2281	7462 7470	8885 8886	1213 1197	1260 1283	1267 1290	513 537

18) 22310 (1239
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Req 2282	7675 7660	8887 8888	1230 1220	1303 1323	1310 1330	557 583	
Lot 141 fCake 4.3 Curly fine fines	7433 7405	8889 8890	1057 1130	1170 1317	1187 1433	460 403	
Lot 142 fCake 4.1 Curly fine fines	7290 7333	8891 8892	1160 1187	1303 1303	1323 1323	410 393	
Req 2283	7505 7480	8893 8894	1250 1223	1310 1250 10	1317 1250 1/2	650 577 [illegible]	
Req 2284	7720 7667	8895 8896	1217 1207	1323 1297	1327 1300	580 600	
Req 2285	7707 7707	8897 8898	1230 1227	1317 1310	1320 1317	590 582	
Req 2286	7720 7752	8899 8900	1213 1237	1317 1277	1323 1283	573 503	
Req 2287	7613 7685	8901 8902	1227 1200	1347 1273	1353 1277	567 593	
Req 2288	7481 7498	8903 8904	1163 1163	1277 1287	1283 1293	573 673	

Req 2289	7415 7430	8905 8906	1147 1160	1270 1260	1277 1263	667 617
Req 2290	7490 7460	8907 8908	1183 1200	1347 1300	1357 1307	633 567
Req 2291	7430 7420	8909 8910	1190 1177	1323 1333	1330 1343	573 523
Req 2292	7620 7594	8911 8912	1220 1230	1340 1333	1350 1343	573 537
Req 2293	7515 7490	8913 8914	1243 1223	1297 1347	1303 1357	513 537
Req 2294 B	7766 7750	8915 8916	1217 1250	1360 1347	1370 1360	430 420
Req 2295 B	7580 7615	8917 8918	1232 1210	1360 1360	1360 1370	437 417
Req 2296 B	7610 7600	8919 8920	1220 1253	1367 1393	1360 1400	567 540
Req 2297	7300 7314	8921 8922	1180 1170	1283 1347	1293 1353	560 660

					50	1/2	H						
Note	Note												
Lot 143 flake 4.2	7335	8923	1137		1343	1353	560	1357	1397	717			
	7309	8924	1100		1347	1360	533	1377	1407	757			
Goldeln 891	6916	8925	717		823	833	473	750	800	713			
NaOH from Ni Oxalate.	6922	8926	720		773	780	490	753	770	640		Note	
Goldeln 892	6004	8927	683		717	723	360	740	750	387			
Ni Hydrate from Ni phosphate	6052	8928	540		647	657	300	737	743	307		Note	
Goldeln 893	7320	8929	1077		1137	1157	477	1133	1173	660			
NaOH from Ni Borate.	7257	8930	1040		1120	1140	473	1100	1147	667		Note Hot	
Goldeln 894	6024	8931	1023		1077	1110	420	1033	1070	647			
Ni OH. from Ni Nitrate.	6040	8932	1037		1063	1073	350	1030	1057	597		Note hot	
Goldeln 895	6920	8933	860		1067	1090	393	1077	1133	757		note hot	
Goldeln —	18132	8934	27		30	57	323	67	100	303			
Ni + 2 pts Hgo 11 pts Ni OH. made — Rolls	18150	8935	27		40	93	337	107	177	303			
								Note Cap on hot.					
Goldeln 900	7630	8936	1217		1327	1340	470	1353	1387	680			
Make rolls not pressed	7630	8937	1220		1323	1343	570	1320	1377	653			
Note													
Ni SO4 Cry + dry NaOH													
Goldeln 901	7427	8938	1127		1320	1337	583	1327	1360	593			
Crystal Ni SO4 + dry NaOH	7461	8939	1020		1263	1240	450	1200	1383	590			
powder in Rolls not pressed													

150

	350			450		
8936	897	1050	860	977	1200	860
8937	810	1017	800	783	930	860
8938	763	893	750			
8939	810	983	773			

2 splits each locally possible

2 splits 3 splits

Seem definitely Cerrig

8936	1427	1483	987	1393	1510	733
8937	1330	1413	803	1117	1490	633
8938	1330	1387	793	1267	1443	667
" 39	1367	1567	783	1233	1490	710

Cerrig

250

1379	1500	790	1480	1523	1457	1457	407		
1063	1383	703	1327	1453	900	1277	147		
1197	1380	917	1330	1397	1663	1300	520		
1063	1383	743	1280	1400	980	1277	417		

3 times more

300

not clear

				50	1/2	H				
Goldslm 905	7915	8940	1090	1253	1263	600	1270	1310	483	
Nisoy Cryst dry powder Rolls	7831	8941	1137	1257	1280	433	1317	1350	587	
Naoth. not pressed 15% fines										
Gal Kulzin 906	7530	8942	1097	1220	1230	467	1257	1307	567	
S	7487	8943	997	1197	1203	573	1240	1267	570	
Goldsilm 902	7297	8944	1133	1290	1317	660	1323	1383	703	
Dry Naoth - Nisoy Rolls	7367	8945	1170	1263	1290	663	1317	1350	727	
Not pressed										
Goldsilm 907	7320	8946	1100	1200	1217	583	1253	1270	650	
Dry Nisoy + Naoth Rolls	7266	8947	1063	1200	1217	667	1257	1283	681	
Not pressed										
Lot 144 flake	7213	8948	1133	1233	1240	687	1170	1197	693	
4.2	7220	8949	1147	1223	1237	683	1280	1230	753	
				10	1/2	H				
Req 2298	7510	8950	1200	1273	1283	487				
	7543	8951	1223	1270	1280	457				
Req 2299	7697	8952	1233	1293	1300	470				
	7632	8953	1243	1287	1297	493				
Req 2300	7540	8954	1237	1327	1333	460				
	7530	8955	1217	1283	1290	460				
Req 2301	7769	8956	1220	1273	1283	470				
	7672	8957	1183	1253	1263	463				

5 swollen
1 split

	1	1/2	Hot			Hot
8940	1327	1397	740	1227	1453	600
41	1327	1373	737	1190	1477	580
8942	1267	1343	737	1193	1393	643
8943	1247	1317	723	1173	1333	630
8944	1313	1377	827	1230	1417	780
8945	1340	1410	817	1250	1437	720
8946	1300	1347	717	1247	1357	657
8947	1317	1360	783	1283	1397	693
	300			350		
8940	910	1113	420	717	833	723
41	1033	1277	597	863	977	793
8942	1030	1263	210	910	1000	850
43	1013	1210	-	770	993	857
8944	1067	1223	427	750	967	867
45	1230	1397	790	863	1067	923
8946	817	980	793	1000	1230	967
47	857	993	763	1077	1300	960

1 split, badly cut.
2 splits, badly cut.
1 split - badly cut.

		Hot	Slow warm		
1150	1330	710	1300	1367	
1253	1440	740	1410	1477	
1210	1367	787	1350	1393	
1143	1293	757	1263	1360	
1190	1330	783	1300	1330	
1253	1387	783	1370	1467	
1197	1327	727	1330	1397	
1290	1400	753	1387	1450	
917	950	743	3 split		
1007	1170	960	2 "		
1150	1283	960	1 split		
960	1133	887	2 split		
817	923	850			
1060	1290	967	badly burnt		

Req 2302	7818	8958	1210 1	1270	1283	497	
	7872	8959	1248	1310	1327	497	
Req 2303	7710	8960	1233	1303	1310	500	
	7654	8961	1210	1317	1327	467	
Req 2304	7510	8962	1147	1270	1277	507	
	7476	8963	1183	1253	1263	480	
Req 2305	7645	8964	1257	1320	1327	513	
	7662	8965	1250	1320	1327	510	
Req 2306	7635	8966	1197	1273	1280	513	
	7586	8967	1237	1333	1343	517	
Req 2307	7574	8968	1177	1253	1260	513	
	7551	8969	1177	1333	1340	547	
Req 2308	7634	8970	1250	1293	1300	530	
	7609	8971	1200	1323	1333	557	
Req 2309	7487	8972	1273	1323	1333	530	
	7434	8973	1257	1353	1360	597	
Req 2310	7500	8974	1190	1330	1333	567	
	7540	8975	1190	1350	1357	543	

10 1/2 H

				10	½	H	
Req 2311	7726 7706	8976 8977	1057 1220	1243 1270	1250 1277	483 510	
Req 2312	7333 7390	8978 8979	1223 1167	1280 1250	1287 1257	547 513	
Req 2313	7440 7472	8980 8981	1257 1250	1343 1303	1347 1310	533 500	
Req 2314	7610 7582	8982 8983	1180 1220	1287 1320	1293 1327	523 520	
Req 2315	7551 7540	8984 8985	1197 1170	1343 1407	1350 1420	537 567	
Req 2316	7565 7500	8986 8987	1167 1133	1290 1383	1300 1390	547 590	
Req 2317	7684 7589	8988 8989	1193 1183	1290 1287	1297 1297	547 520	
Req 2318	7436 7430	8990 8991	1250 1250	1290 1343	1297 1350	437 473	
Req 2319	7332 7313	8992 8993	1127 1093	1237 1207	1243 1213	463 462	

				10 ½ H						
Reg 2321	7286 7300	8994 8995	1127 1183	1267 1280	1273 1287	480 540				
Reg 2322	7357 7320	8996 8997	1240 1227	1320 1330	1327 1340	563 610				
145 flake 4.3	7256 7182	8998 8999	1137 1150	50 1290 1270	1300 1280	523 450				
L Otto-NiOH2 S NiOH2 hot Wheat's	6862 6930	9000 9001	1093 1020	1370 1267	1393 1390	767 783	1323 1283	1350 1337	1633 1033	
Sample NiOH2 from freezing	6803 6822	9002 9003	1130 1020	1217 1157	1257 1170	350 320	1210 1150	1237 1193	657 567	
⅛" tube shot	1.998 1.993 1.997 1.998	9004		50 1253	1257	1023	1140	1147 note 1.007	1007	
Goldschm 903 NiOH from just missing NiSO4 + NiOH dry	7363 7358	9005 9006	983 990	1260 1217	1300 1237	667 380	1233 1257	1297 1313	723 657	5
Goldschm 904 just missing NiSO4 + NiOH dry	7597 7458	9007 9008	967 1060	1133 1273	1183 1293	357 393	1130 1210	1263 1270	960 733	
Goldschm Missing dry NiSO4 + NiOH	7420 7435	9009 9010	1037 1147	1290 1367	1327 1400	973 443	1337 1410	1397 1580	433 457	

				200	1/4	H
9000	1213	1380	1033	1057	1280	980
9001	1227	1290	1083	957	1003	1000
9002	1100	1277	627	1027	1167	593
9003	1067	1230	640	900	1037	600
9004	1390	1407	1067	1317	1383	980
9005	1160	1297	413	1060	1200	750
9006	1247	1400	683	1060	1213	730
9007	1027	1173	743	1027	1133	810
" 8	1233	1400	557	1063	1240	733
9009	1217	1490	563	1130	1207	680
10	1250	1523	757	1040	1287	767

3 times more

1167	1230						
1093	1117						

3 times more

300

1360	1447	983	1467	1517	857	907	870

Gallolam 909	7393	9011	1110	1267	1290	300	1323	1357	660		
Mixing Misoy rhabb Dry	7353	9012	1103	1240	1287	303	1293	1323	452		
Lot 146 f	7217	9013	1153	1323	1363	397	1297	1367	773		
44	7229	9014	1167	1270	1290	317	1233	1293	467		
Req 2320	7363	9015	1160	1350	1363	563					
	7251	9016	1147	1330	1333	620					
Req 2323	7350	9017	1093	1347	1357	677					
	7357	9018	1217	1300	1310	693					
Req 2324	7360	9019	1177	1270	1277	737					
	7355	9020	1087	1330	1360	637					
Req 2325	7423	9021	1220	1333	1367	577					
	7363	9022	1200	1317	1327	560					
Req 2326	7450	9023	1213	1387	1400	553					
	7436	9024	1233	1330	1363	523					
Req 2327	7334	9025	1183	1313	1337	480					
	7330	9026	1067	1357	1370	493					
Req 2328	7457	9027	1203	1377	1387	500					
	7473	9028	1193	1400	1413	557					

9011	1280	1393	567	1250	1310	683
12	1260	1333	583	1190	1277	630
9013	1267	1397	810			
14	1210	1287	753			

Req 2329	7363 7320	9029 9030	1193 1167	1410 1333	1417 1350	567 643	/
Req 2330	7425 7398	9031 9032	1170 1197	1300 1287	1310 1290	587 –	//
HHS Expt 1/8 Loaded Encounter 294 Champs run long take notes 4 lines per occo –		9033 9034	2071 2096	2104 2038	2113 2046	810 895	//
Dup of 9033 330 champs		9035 9036	2196 2200	2229 2129	2263 2138	909 895	//
Req 2331	7467 7394	9037 9038	1187 1183	1300 1300	1310 1307	663 767	//
Req 2332	7554 7518	9039 9040	1243 1193	1297 1237	1303 1247	613 590	//
Req 2333	7535 7514	9041 9042	1233 1223	1247 1307	1257 1317	520 543	//
Req 2334	7475 7496	9043 9044	1257 1220	1273 1267	1283 1277	503 450	/
Req 2335	7536 7510	9045 9046	1250 1300	1300 1360	1307 1370	0 Output short avail. 463	/

Req 2336	7552	9047	1250	1337	1350	493	//			
	7500	9048	1187	1297	1310	510				
Req 2337	7541	9049	1200	1223	1233	477	//			
	7532	9050	1237	1333	1347	510				
Req 2338	7570	9051	1283	1350	1360	523	//			
	7550	9052	1237	1263	1270	507				
Req 2339	7383	9053	1250	1257	1267	483	//			
	7330	9054	1133	1150	1163	507				
H Req 2340	7365	9055	1300	1263	1270	530	//			
	7347	9056	1237	1293	1300	557				
H Req 2341	7260	9057	1143	1167	1170	537	//			
	7260	9058	1160	1207	1217	580				
H Req 2342	7599	9059	1230	1243	1253	540	//			
	7650	9060	1277	1270	1280	580				
H – Req 2343	7678	9061	1300	1293	1300	587	//			
	7670	9062	1263	1357	1360	630				
Ra 1802 A & 7526 7564 Sample from drum of lab [illegible] 19% [illegible] 9-20-11		9063	1217	1397	1410	380	1443	1477	477	
		9064	1227	1420	1437	400	1467	1567	497	

	150			200		
9063	1387	1417	373	1373	1470	603
9064	1360	1433	347	1440	1477	657

250			300		
1267	1410	553	1087	1263	877
1233	1467	500	907	1127	823

	350		
9063	1017	1200	833
9064	967	1117	717

RA 1802 B Whatman											
Samples taken from drum at Lab cell											
Receipt 194 — Bucah	7536	9065	1267	50	1393	1407	410	1440	1467	513	
Month 4-20-11 run 200 times	7506	9066	1263		1403	1413	467	1420	1443	523.	
Lot 147-fl 319	7270	9067	1200		1323	1380	563				
	7275	9068	1137		1263	1283	567				
Req 2344	7596	9069	1220	10	1253	1260	570				
	7572	9070	1237		1257	1263	533				
Req 2345	7520	9071	1253		1260	1267	590				
	7505	9072	1200		1250	1257	603				
Req 2346	7304	9073	1217		1267	1277	600				
	7390	9074	1220		1347	1353	617				
N Req 2347	7550	9075	1243		1283	1297	501				
	7510	9076	1243		1253	1263	492				
H. Req 2348	7510	9077	1233		1313	1323	534				
	7500	9078	1250		1283	1287	534				
H Req 2349	7572	9079	1267		1262	1270	427				
	7523	9080	1227		1230	1240	530				
H. Req 2350	7485	9081	1177		1230	1240	530				
	7460	9082	1167		1293	1300	598				

Swollen after 2 fl. run

	150	1/2	T			
9065	1363	1380	413	1327	1370	627
9066	1233	1287	407	973	1033	580
9067	1230	1277	577			
9068	1243	1287	443			

5 splits flaned
8 splits

350					
1060	1270	527	300 Badly swollen + split	880	
557	680	433	Interwings split wide open as though with explosive force.	650	Cut off after last run. Best condition

split thru center

H Reg. 2351	7482	9083	1227	1380	1310	606	
	7460	9084	1217	1280	1287	550	
H Reg. 2352	7450	9085	1247	1280	1287	530	
	7425	9086	1210	1297	1303	527	
H.H.S. Exp. ⅞ loaded by Ericsson. 310-36 dumps. 4 bites per cell long the matter.		9087		2167	2175	1135	
		9088		2075	2083	790	
		9089		2096	2104	785	
		9090		2125	2138	780	
H. Reg. 2353	7515	9091	1257	1303	1313	546	
	7485	9092	1270	1327	1333	505	
" 2354	7506	9093	1173	1273	1283	505	
	7482	9094	1267	1263	1273	508	
" 2355	7440	9095	1170	1263	1273	508	
	7426	9096	1253	1283	1290	553	
" 2356	7545	9097	1067	1250	1257	489	
	7460	9098	1267	1330	1343	524	
" 2357	7600	9099	1270	1303	1310	485	
	7605	9100	1307	1330	1353	469	

H. Reg. 2358	7420	9101	1217	1257	1263	482				
	7400	9102	1207	1257	1263	521				
" 2359	7497	9103	1233	1310	1317	521				
	7495	9104	1280	1330	1343	510				
" 2360	7455	9105	1252	1330	1343	546				
	7486	9106	1272	1320	1330	550				
" " 2361	7292	9107	1172	1237	1247	518				
	7290	9108	1193	1287	1293	540				
" 2362	7418	9109	1233	1347	1357	563				
	7453	9110	1230	1277	1283	514				
Ti Exp. 1560 See attached sheet	7470	9111	1200	1403	1430	467	1393	1407	567	
# 26.7 F. 3.8	7492	9112	1203	1380	1397	467	1397	1440	567	
Goldstein $Ni(OH)_2$ 896	7248	9113	860	923	967	530				
Ti Chromate & Na OH 300 at.	7220	9114	847	927	933	587				
Goldstein $Ti(OH)_2$ 897 A	7553	9115	633	1173	1223	813	1060	1117	793	
30% $Co(OH)_2$ 300 At.	7473	9116	633	1197	1240	823	1100	1147	803	
Goldstein $Ti(OH)_2$ 897 B.	6720	9117	1100	857	860	457	857	867	467	
30% $Co(OH)_2$ 300 at.	6630	9118	1087	850	853	530	1783	793	483	

5 flame 2 pm

[ITEM FOUND IN BOOK]

T.A.E. Nos 9111-12

Jan 15/12

Copy of Experiment # 1560

17.178 lbs NaOH Sol 20%

21,672 NiSO4 " Sol 1335

138 Gms CoSO4

Made up cold in agitating tank # 2 1560 by stirring 1 hr then dried in steam dried with large Buffalo Blower running at RPM per min.

Taking temp of material 3 times a day

Object of experiment to see if the Hydrate made in this manner could be dried in a shorter time than 15 days which is the average

R Abergast.

Elect Furnace Tube # 9111 A			Tube # 9112 B	
167	240	747	240	749
1 1017			1 1020	
2 1152			2 1167	
3 1200			3 1203	
56 1403			56 1380	
109 1393			109 1393	

Note - Time of drying and temperatures not given in original record.

G F Hamden

What is this Expt

See sheet attached previous page
Smith.

smaller split 5 places

9111	1367 x	1383	680	1377	1440	627
9112	1373	1393	940	1357	1463	573

Copy

badly swollen
4 splits.

250

1250	1390	583	300			
1380	1430	607	963 x	1117	637	
			1067 x	1273	700	

5 splits badly swo.

1 split sl. swo.

Goldstein $Ni(OH)_2$ 898 made from NiH_2 by rollers 300 At.	5.405	9119	30	1260	4	7	217	100	103	43	
	7.451	9120	30		3	45	217	97	90	40	
Goldstein $Ni(OH)_2$ 899 NiO_2 and dry $NaOH$ by rollers 300 At.	6.854	9121	43		43	47	220	70	77	87	
C_2O_3 (?) Reduced at 2000° F.	11.042	9122	987		1103	1113	583	967	1080	673	
	11.148	9123	50		50	53	223	60	67	77	
Lot 136 Ni flake H 24.0 H. 4.1 Dup. 8810-11	7.306	9124	1217		1263	1293	457				
	7.335	9125	1207		1317	1350	583				
Lot 148 Ni flake H 24.0 H. 4.2	7.410	9126	1183		1280	1290	517				
	7.600	9127	1220		1260	1280	483				
# Reg 2363 $Ni(OH)_2$	7.660	9128	1223		1280	1290	733				
	7.670	9129	1223		1273	1283	717				
" 2364 "	7.719	9130	1273		1323	1333	617				
	7.690	9131	1193		1277	1287	510				
" 2365 "	7.676	9132	1257		1320	1337	537				
	7.640	9133	1260		1303	1313	510				
" 2366 "	7.595	9134	1250		1277	1287	457				
	7.563	9135	1210		1257	1267	460				

Note this

assuming 5 times more

9122	850	997	777
9123	87	93	167

of Thibault	2367	Reg.	7603	9136	1187	1230	1260	507		
			7650	9137	1177	1247	1253	507		
"	2368	"	7492	9138	1117	1210	1220	503		
			7502	9139	977	1207	1217	467		
"	2369	"	7453	9140	1123	1243	1257	467		
			7680	9141	1210	1293	1303	513		
"	2370	"	7564	9142	1200	1260	1270	530		
			7578	9143	1123	1247	1260	503		
"	2371	"	7640	9144	1213	1333	1363	567		
			7697	9145	1063	1250	1257	500		
"	2372	"	7460	9146	1193	1253	1270	533		
			7456	9147	1197	1280	1290	500		
"	2373	"	7450	9148	1147	1227	1237	470		
			7500	9149	1190	1237	1247	473		
"	2374	"	7673	9150	1247	1303	1313	497		
			7660	9151	1157	1263	1270	543		
"	2375	"	7620	9152	1193	1257	1267	513		
			7600	9153	1213	1270	1277	553		

								100	1/2	4	
Gelatin $Ni(OH)_2$ 919	7683	9154	1120	58	1373	650	1380	1440	733		
$NiSO_4 + 7H_2O$ and 10 mol NaOH	7663	9155	1110	10	1280	587	1277	1380	593		
mixed dry. Pressed 300 At.											
Gelatin in $Ni(OH)_2$ 920	7660	9156	1077	253	1270	517	1327	1367	563		
$NiSO_4 + 7H_2O$ and 20 mol NaOH	7632	9157	1090	210	1240	393	1313	1337	550		
mixed dry Pressed 300 At.											
Shump Flake	6828	9158	393	73	603	363					
H. 26.7 Ht. 2.4	6970	9159	777	19	853	523					
Y.A.E. Special	6172	9160	1007	103	1123	300	1173	1193	703		
1.6 .6 - 60 water dried with SO_4 in											
Y.A.E. Special	6110	9161	1040	1077	1097	300	1177	1200	553		
1.6 .6 - 50 water dried with SO_4 in											
Ol. $Ni(OH)_2$ 2376 Reg.	7480	9162	1227	1220	1233	497					
	7436	9163	1093	1247	1253	517					
" 2377 "	7560	9164	1217	1260	1270	477					
	7630	9165	1233	1273	1280	493					
" 2378 "	7489	9166	1233	1290	1297	660					
	7500	9167	1193	1267	1273	797					
" 2379 "	7547	9168	1193	1250	1257	667					
	7555	9169	1217	1273	1280	633					

9154	1400	1510	640	1237	1510	687
9155	1237	1400	620	1130	1383	633
9156	1257	1433	633	1000	1430	620
9157	1323	1403	607	1310	1487	670
9160	1133	1207	567			
9161	1133	1213	583			

3 times worn

		250						
1410	1447	983	1580	707				
1323	1383	897	1030	717				
			1 split	at sho.				
1297	1370				300			
1413	1467	893	997	713	1050	1200	787	
		910	1110	720	1000	1210	727	
						1 split.		

2 splits badly out.

Co 70E

H	$Ni(OH)_2$	2380	Reg.	7430	9170	1200	1180	1287	550	//			
				7447	9171	1197	1140	1253	480				
"		2381	"	7530	9172	1200	1147	1227	480	//			
				7452	9173	1150	1133	1150	483				
"		2382	"	7420	9174	1187	1273	1280	563	//			
				7396	9175	1167	1250	1257	590				
Y.B.E. $Ni(OH)_2$ #1				6071	9176	760	937	940	303	990	1017	520	//
48 g. $NiSO_4$ 180 g. NaOH sealed overnight bomb. 300 Ct.													
H	$Ni(OH)_2$	2383	Reg.	7525	9177	1202	1267	1277	623	//			
				7503	9178	1207	1267	1277	597				
"		2384	"	7518	9179	1243	1267	1280	517	//			
				7515	9180	1243	1287	1293	490				
"		2385	"	7564	9181	1263	1277	1283	487	//			
				7532	9182	1220	1272	1280	487				
"		2386	"	7470	9183	1263	1257	1267	427	//			
				7480	9184	1253	1270	1277	483				
"		2387	"	7678	9185	1283	1252	1267	420	//			
				7651	9186	1243	1367	1377	423				

Lot 149 Ni flake	7380	9187	1123	1277	1310	410				
Hyd. 23.7 Fl. 4.3	7335	9188	1193	1223	1253	307				
Goldstein $Ni(OH)_2$ 911	7370	9189	1243	1280	1307	307	1267	1317	500	
Wet method – 1 % Uranium hydroxide.	7375	9190	1230	1270	1297	297	1240	1343	500	
not pressed										
Goldstein $Ni(OH)_2$ 912	7080	9191	1197	1243	1267	367	1247	1317	570	
Wet method – 3 % Uranium hydroxide	7017	9192	1170	1243	1287	413	1263	1303	560	
not pressed										
Goldstein $Ni(OH)_2$ 913	7600	9193	1133	1310	1333	450	1330	1350	580	
Wet method – 5 % Uranium hydroxide	7575	9194	1167	1260	1300	370	1297	1327	533	
not pressed										
Goldstein $Ni(OH)_2$ 914	7763	9195	1027	1143	1173	457	1200	1257	657	
Rollers – 10 % Uranium hydroxide.	7718	9196	1023	1090	1120	417	1123	1170	633	
300 at.										
Goldstein $Ni(OH)_2$ 915	7510	9197	1023	1067	1087	370	1120	1177	650	
Rollers – 3 % Uranium hydroxide.	7636	9198	1007	1083	1100	420	1117	1133	660	
300 at.										
Goldstein $Ni(OH)_2$ 916	7632	9199	1020	1130	1157	427	1180	1227	780	
Rollers – 5 % Uranium hydroxide.	7580	9200	996	1180	1217	483	1197	1257	883	
300 at.										
H. $Ni(OH)_2$ 2388 Reg.	7695	9201	1170	1220	1230	567				
	7590	9202	1217	1247	1253	580				
" 2389 "	7640	9203	1217	1237	1263	467				
	7725	9204	1187	1247	1250	467				

			2 splits swollen	1 split swollen 2 " "
9189	1177	1260	583	
9190	1233	1307	577	
9191	1177	1323	603	
9192	1220	1283	637	
9193	1333	1433	663	
9194	1233	1307	558	

H. Ti(Cost)½	2390	Reg.	7596	9205	1243	1247	1260	470		
			7630	9206	1247	1183	1263	477		
"	2391	"	7710	9207	1247	1250	1263	390		
			7677	9208	1237	1280	1310	400		
"	2392	"	7800	9209	1240	1283	1293	427		
			7785	9210	1243	1257	1263	497		
"	2393	"	7530	9211	1203	1210	1217	487		
			7520	9212	1120	1233	1240	480		
"	2394	"	7550	9213	1180	1237	1243	530		
			7520	9214	1190	1213	1223	547		
"	2396	"	7500	9215	1117	1180	1187	573		
			7470	9216	1240	1240	1243	537		
"	2397	"	7410	9217	1240	1280	1287	607		
			7440	9218	1220	1257	1260	543		
								Bad tex		
"	2398	"	7690	9219	800	1273	1283	500		
			7670	9220	1220	1323	1333	500		
Lot 150 ti flake			7355	9221	1213	1397	1430	557		
Std. 24.3 Fl. 4.1			7340	9222	1197	1350	1387	520		

16) 19965 (1248

A. Ti(OH)$_2$	2395	Reg.	7497	9223	1177	1233	1260	503		
			7605	9226	1197	1303	1313	520		
"	2399	"	7485	9225	1240	1273	1280	520		
			7462	9226	1193	1240	1267	523		
"	2400	"	7867	9227	1247	1317	1323	563		
			7820	9228	1263	1337	1347	593		
"	2401	"	7409	9229	1230	1250	1260	593		
			7427	9230	1243	1273	1283	627		
"	2402	"	7360	9231	1253	1280	1293	597		
			7350	9232	1227	1260	1263	633		
"	2403	"	7374	9233	1247	1313	1323	667		
			7364	9234	1233	1260	1270	683		
Pot 151 Ti flake			7245	9235	1227	1317	1377	447		
H 23.7 H 4.0			7250	9236	1160	1253	1353	523		
A Ti(OH)$_2$	2404	Reg.	7533	9237	1197	1270	1283	650		
			7590	9238	1197	1263	1273	587		
"	2405		7505	9239	1213	1277	1283	540		
			7525	9240	1197	1240	1250	460		

Notebook, N-12-04-17.1

N. Tri(pol)$_2$	2406	Reg.	7469	9241	1227	1260	1250	507	//	
			7472	9242	1200	1307	1317	510		
"	2407	"	7482	9243	1267	1307	1320	507	//	
			7460	9244	1257	1257	1267	433		
"	2408	"	7420	9245	1243	1283	1290	437	//	
			7470	9246	1260	1300	1310	437		
"	2409	"	7427	9247	1217	1287	1297	447	//	
			7398	9248	1167	1267	1263	483		
"	2410	"	7610	9249	1257	1323	1333	513	//	
			7585	9250	1197	1317	1327	450		
"	2411	"	7477	9251	1230	1310	1317	513	//	
			7420	9252	1210	1267	1273	510		
"	2412	"	7450	9253	1227	1353	1363	520	//	
			7440	9254	1233	1267	1277	513		
"	2413	"	7505	9255	1233	1237	1243	683	//	
			7497	9256	1233	1230	1233	617		

H. Ni(CO4)$_2$	2414	Reg.	7475	9257	1250	1257	1263	613
			7450	9258	1217	1230	1233	520
"	2415	"	7375	9259	1217	1213	1223	467
			7354	9260	1210	1217	1223	477
"	2416-17	"	7400	9261	1277	1290	1300	520
			7425	9262	1257	1293	1303	533
"	2418	"	7232	9263	1210	1240	1247	610
			7265	9264	1207	1233	1260	610
"	2419	"	7390	9265	1230	1247	1257	700
			7343	9266	1220	1213	1220	637
"	2420	"	7567	9267	1250	1267	1277	607
			7580	9268	1260	1297	1307	647
"	2421-22	"	7715	9269	1260	1330	1337	593
			7675	9270	1250	1277	1287	517
"	2423		7540	9271	1227	1237	1243	537
			7480	9272	1250	1253	1263	600

H	Ni(OH)$_2$	2424-25	Reg. 7520	9273	1240	1250	1257	640	ll
			7517	9274	1257	1260	1270	650	
"		2426-27	" 7460	9275	1250	1263	1273	250	ll
			7409	9280	1223	1223	1230	573	
"		2428 & 30	" 7572	9277	1200	1210	1217	587	ll
			7560	9278	1280	1253	1263	523	
"		2429	" 7460	9279	1230	1237	1243	550	ll
			7400	9280	1227	1240	1247	507	
"		2431-32	" 7595	9281	1223	1237	1247	597	ll
			7576	9282	1193	1200	1210	670	
"		2433-34	" 7530	9283	1233	1220	1233	673	ll
			7525	9284	1233	1227	1237	703	
"		2435-36	" 7544	9285	1233	1247	1257	667	ll
			7542	9286	1197	1220	1227	563	
"		2437-38	" 7380	9287	1227	1233	1233	550	ll
			7395	9288	1247	1220	1237	483	

H. $Ni(OH)_2$ 2439A	7.420	9.289	1.170		1.297	1.327	420			
Diem #37 Drying Expt.	7.360	9.290	1.173		1.293	1.327	420			
Lot #152 Ni Hahn	7.302	9.291	1.177		1.317	1.340	500			
H. 23.7 Hl. 4.0	7.330	9.292	1.157		1.300	1.330	517			
Goldstein $Ni(OH)_2$ #925	7.080	9.293	1.000		1.293	1.330	417	1.303	1.313	397
Reg. proportions filter press	7.160	9.294	997		1.317	1.340	320	1.403	1.420	450
Goldstein $Ni(OH)_2$ #927	7.230	9.295	1.083		1.310	1.317	320	1.333	1.347	450
Reg. proportions Conc. in bag	7.215	9.296	1.100		1.340	1.373	223	1.363	1.373	460
Goldstein $Ni(OH)_2$ #928	7.090	9.297	1.100		1.317	1.350	317	1.340	1.353	477
Reg. proportions Conc. in bag.	7.030	9.298	1.097		1.313	1.323	307	1.333	1.353	460
Goldstein $Ni(OH)_2$ #929	7.050	9.299	1.050		1.313	1.323	310	1.343	1.357	450
Reg. proportion Conc. in bag.	7.030	9.300	1.030		1.267	1.290	303	1.300	1.320	347
Goldstein $Ni(OH)_2$ #930	7.370	9.301	1.020		1.303	1.320	323	1.330	1.350	387
Reg. proportions Conc. in bag	7.270	9.302	1.057		1.347	1.350	323	1.370	1.387	457
Goldstein $Ni(OH)_2$ #931	7.210	9.303	1.087		1.330	1.360	293	1.377	1.387	473
Reg. proportions Conc. in bag	7.097	9.304	1.083		1.310	1.347	300	1.343	1.357	450

	150			200			250			300		
					5 swallow 2 splits							
9293	1277	1303	683	1250	1267	830	1067	1260	1050	1083	1133	757
9294	1477	1533	800	1413	1467	947	1180	1360	880	967	1183	757
9295	1387	1397	637	1357	1380	767	1177	1343	883	1133	1343	713
9296	1430	1443	630	1410	1433	750	1280	1467	927	1143	1337	740
9297	1383	1397	630	1327	1363	720	1167	1317	877	1127	1337	700
9298	1387	1410	547	1343	1377	700	1300	1480	1033	1063	1363	693
9299	1450	1483	553	1413	1460	567	1303	1513	880	1097	1267	653
9300	1387	1383	443	1300	1320	553	1233	1433	883	1067	1300	697
9301	1427	1450	440	1410	1437	497	1373	1500	877	1067	1500	780
9302	1433	1477	470	1360	1413	553	1183	1467	887	927	1160	697
9303	1430	1457	453	1363	1400	533	1130	1347	833	1010	1187	600
9304	1320	1387	423	1183	1300	513	1163	1413	883	983	1243	627

Goldstein $Li(OH)_2$ #932	7040	9305	1037	1303	1340	297	1355	1350	447	
Reg. proportions Conc. in bag.	7030	9306	1027	1310	1350	300	1380	1390	470	
Goldstein $Li(OH)_2$ #933	7030	9307	1020	1300	1350	327	1300	1330	453	
	7040	9308	1027	1317	1343	413	1350	1363	483	
Lot 153 Li flake	7253	9309	1150	1257	1283	527	1280	1300	540	
Stg. 4 Fl. 24	7260	9310	1177	1220	1250	600	1300	1320	490	
				10						
# $Li(OH)_2$ 2439-40 Reg.	7395	9311	1210	1233	1240	477				
	7395	9312	1220	1280	1290	500				
" 2441-42 "	7432	9313	1237	1280	1290	547				
	7450	9314	1237	1277	1287	500				
" 2443-44 "	7472	9315	1190	1223	1277	483				
	7443	9316	1210	1277	1287	530				
" 2445-46 "	7450	9317	1173	1240	1247	533				
	7458	9318	1207	1243	1253	517				
" 2447-48 "	7496	9319	1240	1240	1247	490				
	7474	9320	1220	1230	1237	447				

5 swollen – 3 splits

4 split

9305	1390	1377	417	1227	1293	503
9306	1453	1483	457	1413	1457	523
9307	1380	1402	417	1330	1393	480
9308	1390	1463	420	1303	1380	463

250

badly swollen
5 splits

1113	1263	890	833	993	650	
1387	1497	887	1333	1450	1693	
1193	1367	893	1250	1393	627	
1313	1370	887	1193	1357	700	

H	$Ni(OH)_2$	2449-50	Reg.	7473	9321	1210	1283	1293	487		
				7464	9322	1207	1273	1280	487		
"		2451-52	"	7556	9323	1210	1240	1243	467		
				7629	9324	1220	1257	1263	503		
"		2453-54	"	7379	9325	1223	1240	1247	537		
				7423	9326	1230	1277	1297	583		
"		2455-56	"	7400	9327	1200	1257	1263	633		
				7464	9328	1197	1250	1260	667		
"		2457-58	"	7550	9329	1197	1250	1260	700		
				7500	9330	1213	1260	1267	763		
Goldstein	$Ni(OH)_2$	934		7756	9331	1203	1337	1353	343	1310	1320	417
Reg proportions. Reg process 10% Na_2SO_4				7780	9332	1163	1390	1431	400	1350	1363	443
Sol. squeezed out												
Goldstein	$Ni(OH)_2$	935		7769	9333	1137	1303	1320	343	1297	1303	397
Reg proportions cell. Reg process 20% Na_2SO_4 Sol. squeezed out.				7758	9334	1153	1347	1370	347	1320	1333	387
Goldstein	$Ni(OH)_2$	936		7518	9335	1183	1363	1390	347	1290	1300	423
Reg proportions. Reg processes 30% Na_2SO_4 squeezed out				7476	9336	1160	1303	1370	340	1313	1333	383

				200		
9331	1383	1423	520	1180	1557	567
9332	1437	1447	523	1467	1557	600
9333	1350	1377	510	1317	1590	573
9334	1443	1453	500	1420	1487	550
9335	1380	1393	447	1333	1490	583
36	1393	1417	500	1310	1517	607
~~9337~~	~~1397~~	~~1413~~	~~500~~			
9338	1399	1430	477			

Bad success
well done success

5 splits
5 splits

5 splits each

3 splits

2 splits

Co 1487

250		
1220	1340	597
1090	1257	630
1032	1157	612
1167	1363	670
1052	1282	663
1220	1333	657
917	1100	637

each burst in 5 places and badly out.

4 splits

6 splits

3 splits

				10 IV	.5V	130°F Hot	50	2 spots smaller	
Goldstein $Li(OH)_2$ #937	7673	9337	1150	1353	1377	350	1330	1357	443
Reg. proportions cold Reg process	7652	9338	1163	1353	1377	350	1327	1363	183
40% Na_2SO_4 not squeezed out									
Goldstein $Li(OH)_2$ #939	7049	9339	1080	1330	1350	340	1347	1357	433
Reg proportion cold Reg process	7113	9340	1080	1347	1367	350	1340	1350	463
60% Na_2SO_4 squeezed out									
Goldstein $Li(OH)_2$ #944	7372	9351	1100	1337	1357	333	1333	1347	467
Reg. propor. Sol. heated Reg process	7377	9352	1100	1330	1353	327	1333	1353	383
30% Na_2SO_4 squeezed out									
Goldstein $Li(OH)_2$ #945	7012	9343	1013	1297	1313	327	1287	1290	340
Reg. propor. Sol. heated	7010	9344	1023	1300	1317	317	1290	1297	353
60% Na_2SO_4 squeezed out									
Goldstein $Li(OH)_2$ 938	7340	9345	1163	1413	1430	320	1367	1383	370
Reg. propr. Cold. Reg process	7355	9346	1110	1367	1387	317	1343	1360	390
50% Na_2SO_4 squeezed out									
Goldstein $Li(OH)_2$ 940	7232	9347	1167	1377	1390	317	1363	1377	380
Reg. propr. 100% Na_2SO_4	7257	9348	1183	1343	1367	313	1317	1343	423
squeezed out									
Goldstein $Li(OH)_2$ 941	7710	9349	1180	1367	1383	300	1320	1340	347
Reg. propr. Hot. 20%	7787	9350	1167	1347	1357	300	1307	1317	337
Na_2SO_4 squeezed out									
Goldstein $Li(OH)_2$ 942	7663	9351	1117	1327	1337	400	1277	1303	650
Reg. propr. hot	7672	9352	1130	1330	1333	347	1280	1310	647
30% Na_2SO_4 squeezed out.									

			2 splits			
				≤ 200	badly swollen 3 splits	
9337	1397	1413	500	1383	1467	617
9338	1397	1430	477	1343	1430 1 split	377
9339	1437	1450	517	1447	1543	617
9340	1397	1433	533	1467	1543 4 splits	633
9341	1433	1447	563	1467 6 splits	1560	650
9342	1383	1417	480	1353	1533 1 split	553
9343	1397	1373	497	1360	1440	600
9344	1380	1390	507	1373	1497	583
9345	1457	1487	493	1467 7 splits	1560	633
9346	1470	1463	503	1477	1653	700
9347	1430	1453	513	1340 1 split	1500	750
48	1447	1473	603	1410	1543 3 splits	833
9349	1427	1457	563	1360 2 "	1517	767
50	1427	1453	610	1350	1523	800
9351	1413	1430	633	1433	1533	700
52	1383	1410	657	1360	1500	817
53						

≥ 200	3 splits badly swl.		≥ 300	3 splits badly swollen		
917	1100	637	933	1167	700	
1327	1450	667	1317	1487	757	
1250	1473 5 splits badly swl.	623	1307	1507	720	
1123	1377	607	1200	1420	710	
1267	1540 2 splits	667	1340	1507	757	
993	1313 1 small split.	660	1117	1273 2 splits	773	
673	1407 3 splits	670	1250	1407 4 splits	760	
1240	1453 1 split	673	1257 2 splits	1433	763	
1267	1447 3 splits	660	1200	1393	717	

	350			390				440 4 Cup			Half of 223 4 Cup			
9337	813	960	733	583	787	723	Burst Between Each Ring	777	903	647	Active Nothing Gone	263	270	333
9338														
9339	1067	1300	787	390 587	1260	780	O.K.	797	917	693	O.K.	850	937	730
9340														
9341														
9342	1033	1217	833	390 577	1250	800	Burst 3 Places	987	1063	697	Burst 3 Places	740	833	707
9343	867	1067	740	390 753	957	690	O.K.	533	583	607	O.K.	767	867	710
9344														
9345														
9346	1153	1300	787	390 763	993	717	O.K.	627	673	683	O.K.	900	933	667
9347	767	983	800	390 600	813	747	Burst 4 Places	813	967	643	Burst All Over Swollen	560	577	633
9348	820	950	783	690	873	780	Burst 4 Places	833	920	690	Burst 6 Places Swollen	593	617	683
9349														
9350														
9351	1103	1290	833	390 1033	1293	787	Burst 3 Places	693	707	760	Burst 5 Places	757	533	707
9352	1057	1220	773	863	1140	783	Burst 4 Places	873	867	733	Burst 6 Places Both Swollen	770	833	717

	550 Hot Cold	.09V	.09V	H.C.	ACTIVE METAL
9337	110	120	123	960	
9338					
9339	923	953	1010	720	O.K.
9340					
9341					
9342	873	920	1010	743	3 Burst.
9343	767	790	973	677	O.K.
9344					
9345					
9346	877	900	960	647	7 Burst 2 spl. Ets
9347	493	503	533	577	6 Burst 3 swollen
9348	560	573	607	600	5 Burst
9351	713	727	807	700	6 Burst
9352	717	733	800	733	" "

					50			100	1/2	1 pint
Bolstein $Ti(OH)_2$ 943	7678	9353	1137		1330	1343	333	1280	1313	650
Reg. preparation lot	7650	9354	1017		1303	1320	300	1287	1300	670
40% Ti_2SO_4 sprayed out					10					
Lot 154 Ti flake	7640	9355	1100		1149	1167	500			
H 237 7 4.2	7607	9356	1193		1187	1207	500			
					10					
H $Ti(OH)_2$ 2459-60 Reg.	7679	9357	1243		1240	1257	480			
	7667	9358	1220		1233	1247	537			
" 2461-62 "	7698	9359	1207		1230	1240	560			
	7648	9360	1243		1367	1380	587			
" 2463-64 "	7625	9361	1197		1233	1243	567			
	7660	9362	1187		1217	1230	550			
" 2465-66 "	7799	9363	1147		1213	1227	447			
	7763	9364	1213		1327	1343	550			
" 2467-68 "	7517	9365	1227		1277	1290	533			
	7485	9366	1233		1263	1297	530			
" 2469-70 "	7474	9367	1230		1250	1263	533			
	7485	9368	1230		1263	1297	533			

				300		
9353	1397	1433	670	1430	1507	783
54	1467	1490	827	1553	1613	800

3 splits

3 splits

		450				500		
9353	Burst 1 Placed	747	794	693	Both Burst 17 Placed	673	713
54	Burst 5 Placed	827	923	713		733	810

350				300		
1240	1600	630		1133	1287	717
1300	1460	603		1293	1463	716

2 splits - badly 200

3 splits - badly 200

3 bad splits

6 bad splits

H.C.		550				
		50	600	50	50	
667	6 Burst	583	597	617	600	
700	" "	717	730	773	723	

	350		390			
9353	980	1177	793	757	923	813
9354	1040	1200	790	890	1113	833

2471-72 Rep	7440	9369	1200	1247	1260	540	
	7430	9370	1233	1267	1283	533	
2473	7370	9371	1213	1253	1263	525	
	7384	9372	1207	1283	1293	530	
2474	7438	9373	1193	1267	1273	523	
	7400	9374	1153	1210	1217	523	
2475	7547	9375	1217	1310	1320	583	
	7493	9376	1223	1287	1297	523	
2476	7503	9377	1217	1320	1327	540	
	7485	9378	1233	1293	1303	520	
2477	7400	9379	1233	1340	1357	543	
	7415	9380	1223	1253	1263	520	
2478	7543	9381	1197	1287	1297	537	
	7510	9382	1257	1310	1320	510	
2479	7459	9383	1243	1293	1303	513	
	7471	9384	1230	1290	1300	513	

2480	7430	9385	1217	1293	1303	507				
	7526	9386	1217	1260	1267	557				
2481	7485	9387	1237	1290	1300	597				
	7540	9388	1203	1270	1280	640				
2482	7600	9389	1197	1267	1280	687				
	7577	9390	1157	1307	1320	740	S			
2483	7583	9391	1253	1290	1300	717	S			
	7560	9392	1267	1300	1307	833				
Long 1/8 loaded by Ericsson 1st Hawaiian (now lot 50) 4 tubes, parcel - Run 3 normal then 10 hot & normal again 4/17/12	274	9393	1996	2035	2083	450	2150	2229	575	
	276	9394	1996	2021	2067	463	2129	2208	575	
	291	9395	2138	2150	2233	500	2250	2404	650	
	299	9396	2108	2288	2163	507	2154	2229	650	
	302	9397	2113	2071	2167	543	2075	2208	690	
	302	9398	2133	2146	2225	590	2121	2221	660	
Lot 155 Cake	7463	9399	1170	1277	1290	513				
	7469	9400	1190	1300	1317	487				
Thomas O Conley -	17693	9401	13	70	87	57				
	17407	9402	13	93	127	83				

Note

	200		
9393	1483	1583	590
9394	1533	1629	587
9395	1642	1748	597
9396	1592	1706	527
9397	1621	1708	537
9398	1604	1658	543

1 apiti, swollen, hard.
2 aplita, swollen, flaccid.

La_2O_3 Anhy	8028	9403	23	47	53	67	
1579 Silver { Expt	7070	9404	580	763	773	490	
Ce_2O_3 Anhyd - 230 D	7521	9405	7	23	27	20	
	7604	9406	7	17	20	0	
Uran hydrox 346 D	10340	9407	10	17	20	17	
	10373	9408	10	33	37	30	
Cr_2O_3 Anhyd 269 D	7690	9409	3	0	–	4	
	7633	9410	3	1.5		7	
Galvanoline 898	5625	9411	10	3	10	3	
Dup of 9119-20 A.	5640	9412	10	3	7	3	
				10	12	4	
2484 Reg	7793	9413	1177	1223	1223	600	
	7780	9414	1193	1247	1250	567	
2485	7780	9415	1240	1300	1343	597	
	7702	9416	1223	1243	1253	520	
2486	7620	9417	1210	1243	1250	470	
	7600	9418	1197	1247	1253	452	

2487	7835 7800	9419 9420	1257 1157		1300 1220	1310 1233	413 400	
2488	7760 7680	9421 9422	1233 1183		1273 1260	1287 1267	400 403	
2489	7623 7620	9423 9424	1150 1203		1230 1307	1237 1317	450 467	
2490	7490 7515	9425 9426	1233 1257		1293 1340	1303 1347	410 450	
2491	7550 7585	9427 9428	1240 1243		1307 1327	1320 1337	430 447	
2492	7518 7520	9429 9430	1227 1183		1297 1260	1307 1267	437 440	
Lot 156 Fe oxide	7369 7360	9431 9432	1143 1153		1283 1240	1290 1250	447 410	
HHS Expt – tubes taken from cell H85 which would give no density after succ changes tubes contained dense black of Fe oxide – Run as long Cobra		9433 9434	1821 1758					

14) 1497 (1241
14
38
28
13
112
13

HHS Exp Same as 9343-4 except tube dipped of or scored in HNO_3 which acumed uniform rinsed with water quickly		9435 9436	1604 1708				
2493 Reg	7430 7420	9437 9438	1243 1240	1290 1310	1300 1320	433 447	
2494	7597 7570	9439 9440	1260 1243	1320 1323	1330 1333	433 427	
2495	7640 7640	9441 9442	1237 1240	1303 1283	1317 1293	413 413	
2496	7600 7620	9443 9444	1240 1250	1257 1287	1267 1297	413 433	
2497	7650 7615	9445 9446	1223 1230	1330 1297	1337 1307	517 523	
2498	7624 7630	9447 9448	1197 1207	1247 1243	1253 1253	423 460	
2499	7590 7607	9449 9450	1197 1243	1257 1303	1263 1313	433 473	

2500	7600	9451	1250	1313	1320	457
	7566	9452	1197	1263	1273	417
2501	7552	9453	1233	1270	1280	443
	7522	9454	1197	1280	1287	463
2502	7610	9455	1193	1210	1220	417
	7698	9456	1147	1240	1250	473
2503	7706	9457	1223	1300	1310	483
	7703	9458	1233	1303	1317	493
2504	7676	9459	1233	1293	1303	497
	7630	9460	1247	1303	1307	487
2505	7572	9461	1213	1270	1277	803
	7580	9462	1113	1287	1297	783
2506	7652	9463	1190	1247	1253	683
	7588	9464	1267	1243	1247	607
See short tube reading		9465	793	863	883	367

Anhydrous Yttrium oxide 8402	9466	13		27	33	33	W		
Ferric hydroxide — 6550 6530	9467	3		17	20	33			
	9468	3		3	7	11			
Molybdic acid reduced by H 1650 Fahr 14710 14680	9469	70		53	57	60			
	9470	67		67	70	60			
Anhydrous Cobalt Peroxide 10230 10240	9471	90		167	250	217	297	307	263
	9472	90		173	257	217	300	320	240
Anhydrous Uranium Dioxide 17450 17380	9473	17		0	33	17			
	9474	10		0	33	17			
Anhydrous Chromic oxide reduced at 1650 Fahr 9500 9524	9475	63		23	27	50			
	9476	63		27	30	50			
Anhydrous Neodymium oxide 8950 — Starkes in the rain	9477	3		Dusted & split 7 times, 6 observations					
	9478	1775							
Long tube Hydrate 2450 flake 155	9479	1771							
	9480	1709							
	9481	1704							
Not swedged	9482	1652							
	9483	1567							

	100			Run as rows		150	½	7t	200		
9471	330	425	310	600	1340	685	1310	550	665	1415	525
9472	337	587	310	600	1365	675	1355	585	600	1420	505

Mr. Edison –
Do you want these to continue to be run as 7ths?

Calculated
8/
-13

Long lubes		
No 2450 - flake 155	9484	1692
	" 85	1533
Sweeped	" 86	1617
	" 87	1742
	88	1700
	9489	1729
Long lubes 2451 - flake 155	9490	1667
Not Sweeped	9491	1738
	9492	1758
	9493	1738
	9494	1667
	9495	1713
Long lubes	9496	1750
2451 Hydrocel flake 155	9497	1713
	9498	1583
Sweeped	9499	1563
	9500	1704
	9501	1583

Lot 157 flake	7502	9502	1177		1253	1260	17	
	7440	9503	1147		1237	1247	390	
2507 Reg	7553	9504	1223		1233	1243	667	
	7531	9505	1198		1267	1277	600	
2508 "	7555	9506	1197		1243	1250	547	
	7565	9507	1117		1223	1233	583	
2509 "	7618	9508	1217		1250	1257	467	
	7698	9509	1237		1263	1270	540	
2510 "	7642	9510	1197		1207	1213	463	
	7598	9511	1177		1203	1210	460	
2511 "	7650	9512	1203		1293	1300	530	
	7664	9513	1290		1303	1313	533	
2512 "	7658	9514	1247		1243	1247	533	
	7674	9515	1247		1263	1267	540	
2513 "	7802	9516	1240		1257	1263	467	
	7754	9517	1167		1213	1223	477	

2514 Rcq	7714	9518	1193		1233	1240	530	
	7654	9519	1233		1263	1267	517	
2515 "	7682	9520	1120		1237	1243	453	
	7640	9521	1207		1227	1237	453	
2516 "	7661	9522	1247		1253	1263	473	
	7650	9523	1270		1267	1273	473	
2517 "	7565	9524	1060		1200	1207	410	
	7540	9525	1223		1250	1253	450	
2518 "	7403	9526	1210		1293	1300	510	
	7379	9527	1210		1300	1310	510	
2519 "	7395	9528	1170		1237	1243	450	
	7379	9529	1173		1237	1243	470	
2520 "	7478	9530	1200		1210	1217	507	
	7495	9531	1203		1223	1230	470	
2521 "	7450	9532	1213		1233	1240	593	
	7489	9533	1183		1253	1260	537	

2522 Reg	7442	9534	1197	1253	1260	540	
	7462	9535	1197	1183	1190	440	
2523 "	7610	9536	1220	1273	1283	457	
	7560	9537	1210	1277	1283	457	
2524 "	7425	9538	1213	1343	1353	500	
	7404	9539	1213	1243	1250	460	
2525 "	7528	9540	1260	1263	1270	513	
	7510	9541	1223	1267	1273	557	
2526 "	7690	9542	1253	1300	1307	513	
	7612	9543	1247	1263	1267	510	
2527 "	7580	9544	1197	1237	1243	463	
	7602	9545	1157	1233	1240	413	
2528 "	7608	9546	1207	1247	1253	453	
	7674	9547	1010	1203	1213	400	
2529 "	7430	9548	1187	1250	1257	477	
	7463	9549	1197	1250	1257	500	

2530 Reg	7432	9550	1217		1233	1240	517	
	7415	9551	1190		1240	1247	560	
2531 "	7612	9552	1233		1263	1267	490	
	7668	9553	1097		1173	1183	523	
2532 "	7517	9554	1233		1260	1267	510	
	7570	9555	1263		1283	1297	510	
2533 "	7776	9556	1210		1247	1257	450	
	7727	9557	1263		1283	1297	490	
2534 "	7720	9558	1220		1283	1300	433	
	7787	9559	1226		1230	1240	432	
2535 "	7622	9560	1197		1223	1230	450	
	7608	9561	1217		1227	1233	452	
2536 "	7700	9562	1250		1257	1270	497	
	7704	9563	1247		1257	1267	497	
2537 "	7633	9564	1113		1230	1237	483	
	7689	9565	1273		1297	1303	543	

2538 Reg	7602	9566	1233		1310	1320	520	
	7618	9567	1230		1200	1263	470	
2539 Reg	7658	9568	1243		1250	1257	447	
	7660	9569	1217		1263	1277	453	
2540 "	7613	9570	1220		1267	1277	427	
	7609	9571	1200		1303	1313	463	
2541 "	7633	9572	1237		1250	1260	447	
	7676	9573	1283		1310	1317	443	
Lot 158 flake	7381	9574	1187		1287	1300	420	
	7396	9575	1173		1283	1293	417	
2542 Reg	7573	9576	1103		1163	1180	460	
	7589	9577	1247		1277	1283	450	
2543 "	7601	9578	1233		1277	1283	463	
	7636	9579	1170		1230	1237	443	
2544 "	7572	9580	1220		1290	1300	443	
	7546	9581	1203		1240	1247	457	
2545	7534							
	7524	9582	1210		1227	1233	663	
		9583	1183		1220	1227	640	

				10	1/2	ft
Reg 2546	7593 7584	9584 9585	1183 1177	1250 1183	1260 1190	553 549
2547	7560 7570	9586 9587	1193 1177	1203 1197	1213 1207	450 267
2548	7573 7531	9588 9589	1160 1180	1167 1167	1180 1177	250 533
2549	7533 7510	9590 9591	1180 1217	1193 1243	1200 1250	460 500
2550	7691 7704	9592 9593	1183 1217	1213 1200	1220 1210	517 560
2551	7625 7645	9594 9595	1217 1197	1230 1223	1237 1230	550 520
2552	7660 7592	9596 9597	1200 1183	1237 1220	1243 1227	597 623
2554	7596 7584	9598 9599	1213 1243	1290 1240	1250 1250	567 553
Lot 159 fleake		9600 9601	1193 1180	1207 1210	1217 1223	293 283

Cerio Potassium Sulphate		9602	3		0	0	0	Fluff all out pieces
Reagent	6990	9603	3		0	0	0	
	6977							
Manganic Oxide		9604	27		100	103	67	swollen & splits –
Reduced by Hydrogen	9460	9605	23		90	97	100	
Pressed	9562							
Anhydrous Tungstic Acid		9606	33		150	160	157	swollen & splits
Reduced in Hydrogen	25H63	9607	37		163	170	167	
1450 Volts	25H12							
Reg 2553	7600	9608	1180		1183	1193	587	
	7697	9609	1153		1157	1167	577	
2555	7693	9610	1197		1193	1200	600	
	7647	9611	1177		1207	1217	583	
2556	7735	9612	1233		1213	1223	650	
	7653	9613	1133		1190	1197	633	
2557	7717	9614	1237		1227	1240	670	
	7720	9615	1217		1216	1220	627	
2558	7769	9616	1043		1163	1170	617	
	7673	9617	1140		1177	1190	573	

Rog 2559	7910 7932	9618 9619	1143 1083	10 1173 1170	1183 1150	430 470		
2560	7974 7835	9620 9621	1113 1117	1127 1187	1133 1193	493 507		
2561	7564 7603	9622 9623	1070 1100	1143 1167	1150 1177	577 543		
2562	7611 7669	9624 9625	1147 1127	1187 1190	1197 1200	537 537		
2563	7922 7922	9626 9627	1163 1157	1213 1193	1227 1207	567 553		
2564	7843 7920	9628 9629	1163 1143	1263 1183	1273 1173	580 583		
2565	7652 7662	9630 9631	1133 1100	1213 1177	1223 1187	580 587		
2566	7948 7868	9632 9633	1147 1123	1203 1210	1217 1220	577 573		

Reg 2567	7949 7848	9634 9635	1150 1150	1223 1207	1237 1217	583 557	
2568	7756 7726	9636 9637	1153 1150	1250 1223	1260 1233	567 533	
2569	7883 7806	9638 9639	1167 1133	1253 1197	1260 1203	527 564	
2570	7670 7688	9640 9641	1103 1117	1170 1183	1183 1190	500 467	
2571	7935 7930	9642 9643	1157 1130	1287 1273	1300 1287	530 533	
2572	7867 7835	9644 9645	1133 1157	1233 1220	1248 1230	540 590	
2573	7769 7728	9646 9647	1133 1150	1207 1263	1220 1270	600 607	
2574	7833 7776	9648 9649	1140 1150	1207 1267	1217 1280	587 658	

Lot 160 feaks	7452 7411	9650 9651	1170 1182	1173 1193	1183 1197	623 613	
2575	7887 7917	9652 9653	1223 1243	1223 1243	1243 1247	507 520	
2576	7693 7673	9654 9655	1197 1197	1233 1217	1240 1223	527 533	
2577	7827 7816	9656 9657	1180 1187	1200 1203	1207 1213	513 533	
2578	7633 7612	9658 9659	1217 1187	1250 1213	1257 1217	503 513	
2579	7630 7643	9660 9661	1237 1220	1250 1237	1257 1243	567 620	
2580	7534 7511	9662 9663	1210 1197	1243 1223	1250 1230	623 630	
2581	7780 7730	9664 9665	1213 1193	1292 1280	1293 1207	713 683	

2582	7673 7634	9666 9667	1213 1203		1233 1210	1240 1217	933 944	
~~2583~~ Lot 161–162 f Cake 24.4.	7220 7227	9668 9669	1150 1210		1193 1200	1187 1213	620 573	
2583	7577 7545	9670 9671	1210 1197		1263 1217	1270 1220	587 547	
2584	7501 7580	9672 9673	1207 1190		1310 1217	1317 1223	663 517	
2585	7690 7703	9674 9675	1190 1190		1233 1217	1240 1223	520 483	
2586	7537 7500	9676 9677	1183 1134		1207 1207	1213 1217	450 487	
2587	7488 7604	9678 9679	1193 1200		1210 1226	1217 1273	473 523	
2588	7593 7616	9680 9681	1227 1203		1210 1223	1233 1233	460 454	

10

Silver plated and return May 10

1243	867	1007	507

#679	150 727	827	653	150 800	975	887	0.

Note - These cells had tubes silver plated same as #679

	150			700 733 600 SEAMS OPENING		
163 A	807	820	823	727	743	533
180 A	823	850	827	807	O.K. 873	520
424 A	887	907	833	880	O.K. 893	553
483 A	1047	1123	847	1040	O.K. 1103	567

CO

JAN -3 1913

TWS

750 873 700
JAN - 3 1913

2589	7587 7581	9682 9683	1233 1237	1233 1220	1290 1230	453 423
2590	7532 7548	9684 9685	1193 1213	1210 1290	1217 1297	430 500
2591	7588 7582	9686 9687	1210 1193	1237 1273	1243 1283	467 533
2592	7552 7540	9688 9689	1047 1157	1217 1200	1220 1213	490 [illegible]
2593	7411 7424	9690 9691		1200 1213	1210 1220	447 500
Lot 163 flake 3.9 — 23.7	7385 7345	9692 9693		1230 1233	1247 1277	467 400
2594	7575 7529	9694 9695		1290 1280	1207 1227	483 473
2595	7552 7536	9696 9697		1193 1197	1202 1210	453 473

2596	7622 7617	9698 9699		1197 1227	1207 1237	460 480	
2597	7678 7646	9700 9701		1237 1263	1253 1283	463 493	
2598	7694 7621	9702 9703		1217 1270	1230 1283	450 520	
2599	7767 7769	9704 9705		1263 1257	1277 1270	483 463	
2600	7640 7609	9706 9707		1227 1223	1237 1233	463 457	
2601	7551 7532	9708 9709		1160 1234	1170 1250	487 474	
2602	7482 7490	9710 9711	1150 1227	1227 1260	1233 1270	733 693	
2603	7518 7529	9712 9713	1190 1227	1247 1283	1257 1290	617 579	

2604	7447	9714	1293	1290	1300	577
	7436	9715	1260	1243	1253	540
2605	7460	9716	1190	1213	1237	507
	7473	9717	1227	1217	1230	500
2606	7569	9718	1183	1233	1240	493
	7533	9719	1157	1200	1217	463
2607	7525	9720	1190	1240	1257	467
	7540	9721	1200	1290	1310	484
2608	7526	9722	1240	1283	1300	47[illegible]
	7566	9723	1190	1240	1250	504
2609	7390	9724	1163	1233	1247	500
	7368	9725	1167	1247	1257	623
2610	7410	9726	1130	1173	1197	440
	7438	9727	1127	1197	1200	490
Lot 164 flake	7314	9728	1167	1170	1193	417
3.9 23.9	7257	9729	1173	1180	1220	417

2611	7540	9730	1240	1297	1310	513	
	7550	9731	1240	1280	1297	590	
2612	7652	9732	1183	1223	1233	560	
	7632	9733	1180	1250	1260	533	
2613	7502	9734	1213	1283	1290	537	
	7502	9735	1230	1303	1313	557	
2614	7531	9736	1200	1293	1307	510	
	7548	9737	1130	1297	1307	503	
2615	7455	9738	1197	1233	1243	450	
	7421	9739	1200	1267	1280	467	
2616	7395	9740	1190	1193	1200	557	
	7368	9741	1193	1173	1177	543	
2617	7406	9742	1250	1227	1240	563	
	7413	9743	1250	1217	1223	567	
2619	7430	9744	1150	1170	1177	567	
	7445	9745	1230	1173	1187	537	

2620	740 7340	9746 9747	1233 1240	1193 1187	1200 1197	537 547	
2621	7325 7311	9748 9749	1223 1223	1190 1213	1197 1227	560 533	
2622	7530 7489	9750 9751	1260 1217	1190 1150	1197 1153	510 503	
2623	7372 7319	9752 9753	1240 1230	1203 1177	1230 1187	627 560	
2662	7495 7481	9754 9755					
2624	7476 7523	9756 9757	1200 1170	1187 1167	1190 1173	527 543	
2625	7699 7650	9758 9759	1220 1220	1177 1187	1183 1193	597 583	
		9794 9795	1147 1153	1177 1180	1180 1157	523 570	
		9796 9797	1233 1223	1183 1180	1190 1183	530 550	

		9795	1200	1163	1190	573	
		9799	1207	1180	1193	613	
		9800	1207	1220	1233	623	
		9801	1210	1143	1150	620	
2626	7605	9760	1207	1200	1212	497	
	7608	9761	1207	1190	1200	503	
2627	7638	9762	1210	1167	1177	467	
	7627	9763	1200	1170	1187	477	
2628	7561	9764	1237	1200	1210	460	
	7510	9765	1227	1177	1190	×	
2629	7518	9768	1200	1210	1223	453	
	7519	9769	1207	1247	1253	477	
2630	7647	9770	1237	1190	1193	≀	
	7622	9771	1230	1180	1190	≀	
2631	7700	9772	1270	1193	1200	450	
	7646	9773	1220	1197	"	467	

2632	7564	9774	1237	1223	1230	487	
	7541	9775	1247	1207	1217	490	
2633	7581	9776	1240	1207	1217	497	
	7593	9777	1200	1217	1220	473	
2634	7612	9778	1257	1233	1243	500	
	7690	9779	1230	1202	1217	500	
2635	7675	9780	1257	1220	1224	490	
	7653	9781	1270	1230	1237	450	
2636	7670	9782	1237	1197	1203	450	
	7664	9783	1270	1237	1243	530	
2637	7680	9784	1220	1200	1213	493	
	7638	9785	1227	1158	1190	517	
2638	7580	9786	1243	1173	1180	510	
	7568	9787	1263	1200	1217	520	
2639	7652	9788	1237	1200	1210	473	
	7630	9789	1260	1173	1183	453	

2640	7462 7715	9490 9491	1247 1177		1197 1070	1210 1167	503 450	1
2641	7531 7565	9492 9493	1200 1260		1197 1190	1210 1200	487 440	1
2661	7496 7462	9494 9495						
2663	7564 7548	9496 9497						
2664	7570 7572	9498 9499						
2665	7694 7648	9800 9801						
2642	7860 7851	9802 9803	1247 1223		1253 1257	X	560 600	1
2643	7538 7570	9804 9805	1253 1227		1270 1247		603 587	1

2644	7608	9806	1230	1257		577	
	7632	9807	1237	1260		583	
2645	7645	9808	1207	1247		610	
	7634	9809	1243	1250		590	
2646	7739	9810	1243	1243		573	
	7725	9811	1260	1287		590	
2647	7735	9812	1243	1267		560	
	7724	9813	1233	1293		545	
2648	7712	9814	1233	1253		583	
	7717	9815	1247	1240		530	
2649	7726	9816	1177	1220		507	
	7729	9817	1223	1267		517	
2650	7645	9818	1247	1273		517	
	7664	9819	1217	1243		513	
2651	7620	9820	1230	1240		473	
	7626	9821	1210	1280		510	

2652	7787 7775	9822 9823	1167 1233	1260 1263	X	503 500	
2653	7732 7745	9824 9825	1150 1177	1223 1200		500 483	
2654	7802 7771	9826 9827	1160 1200	1227 1220		487 490	
2655	7670 7664	9828 9829	1177 1227	1167 1257		490 483	
2656	7634 7628	9830 9831	1193 1363	1173 1230		500 497	
2657	7716 7704	9832 9833	1247 1227	1257 1263		497 490	
2666	7663 7683	9834 9835	1213 1210	1260 1223		493 480	
2667	7714 7692	9836 9837	1230 1227	1227 1230		497 467	

2670	7742 7762	9838 9839	1210 1213	1233 1227	X	493 510	
2671	7740 7741	9840 9841	1210 1213	1237 1263		527 627	
2658	7697 7695	9842 43	1220 1230	1257 1240	1263 1250	683 640	
2659	7780 7777	9844 45	1203 1177	1260 1237	1270 1243	587 520	
2660	7655 7653	9846 47	1157 1190	1237 1260	1240 1273	513 493	
2668	7732 7737	9848 49	1117 1153	1193 1243	1200 1257	583 483	
2669	7814 7870	9850 9851	1180 1193	1240 1253	1260 1297	487 473	
2672	7707 7676	9852 9853	1133 1180	1210 1167	1223 1193	450 483	

2673	7604	9854	1163	1257	1273	440
	7607	9855	1183	1263	1273	470
2674	7716	9856	1127	1233	1243	467
	7763	9857	1177	1277	1290	467
2675	7670	9858	1137	1287	1293	510
	7630	9859	1170	1253	1263	497
2676	7680	9860	1173	1277	1287	500
	7700	9861	1167	1293	1303	510
2677	7751	9862	1187	1290	1303	533
	7762	9863	1180	1267	1283	527
2679	7774	9864	1193	1293	1303	530
	7723	9865	1213	1297	1313	533
2680	7804	9866	1160	1247	1253	507
	7811	9867	1183	1273	1283	513
2681	7530	9868	1103	1193	1200	517
	7532	9869	1153	1200	1203	523

16) 20200 (1262
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114

2682	7603 7628	9840 9841	1107 1067	1170 1190	1193 1197	520 520
2683	7524 7562	9842 9843	1120 1133	1170 1173	1190 1187	527 503
2686	7616 7560	9844 9845	1177 1180	1210 1197	1223 1210	513 497
Lot 166 flecke		9846 9847	1117 1110	1230 1190	1267 1213	493 509
Lot 167 flecke	7382 7375	9848 9849	1130 1150	1133 1170	1290 1210	603 667
2678	7508 7470	9880 9881	1127 1130	1150 1133	1190 1163	540 493
2685	7719 7738	9882 9883	1110 1120	1187 1180	1187 1187	523 490
2687	7708 7679	9884 9885	1113 1117	1200 1220	1220 1233	490 510

2688	7420	9886	1137	1187	1207	470
	7677	9887	1143	1193	1200	487
2689	7422	9888	1127	1167	1197	483
	7749	9889	1130	1207	1227	467
2690	7760	9890	1193	1223	1250	480
	7747	9891	1143	1187	1190	483
2684	7757	9892	1047	1117	1127	467
	7759	9893	1043	1183	1200	404
2691	7569	9894	1123	1193	1220	507
	7639	9895	1147	1183	1200	503
		9896	1127	1207	1227	563
		9897	1157	1183	1213	550
		9898	1160	1160	1173	587
		9899	1127	1167	1180	613
		9900	1130	1173	1193	693
		9901	1140	1177	1217	777

9902
9903
9904
9905

Notebook, N-09-00-00.2

		CO	25
Reg Liver 70% BA - 3½ - 7 Heavy gent - induced H. Lifer Loading - 73 f 24g - 21% KOH 1 gm LiOH.	10000	1487	1546
	10001	1508	1550
	10002	1542	1554
Dup 10000 RUNCOLII	10003	1558	1588
	10004	1563	1625
	10005	1504	1558
Dup 10000 21% KOH 2 gm LiOH	10006	1504	1588
	10007	1492	1571
	10008	1558	1629
Dup 10006 RUNCOLD	10009	1579	1592
	10010	1598	1638
	10011	1574	1613
Dup 10000 21% KOH 3 gm LiOH.	10012	1513	1632
	10013	1508	1679
	10014	1513	1671
Dup 10012 RUNCOLD	10015	1500	1571
	10016	1513	1554
	10017	1571	1646
Dup 10000 21% KOH 4 gm LiOH.	10018	1438	1700
	10019	1458	1771
	10020	1463	1729
Dup 10018 - RUNCOLII	10021	1496	1629
	10022	1442	1550
	10023	1442	1596

	50	100	150	200	A4 Equiv Conveloly	300	400
	1546	1479	1329				
	1533	1458	1229	Co	118 A4 colly		
	1546	1438	1396				
	1596	1483	1208				
	1625	1563	1375	Co			
	1558	1479	1379		118		
	1571	1321	1337				
	1567	1292	1250	Co			
	1596	1367	1375		118		
	1567	1408	1325				
	1608	1454	1363	Co			
	1604	1479	1400		122		
	1592	1300	1325				
	1638	1383	1375	Co			
	1546	1313	1150		121		
	1571	1521	1450				
	1550	1458	1333	Co			
	1663	1633	1600		131		
	1458	1233	813				
	1242	1283	1146	Co			
	1392	1229	1304				
	1675	1725	1713	1663	1625	1546 1533	1492
	1596	1600	1617	1533	1521	1396 1396	1379
	1629	1667	1696	1617	1621	1571 1571	1496
Co	1409 CO2	1479 1446 1579	1721 1708 1804	1496 1463 1479	1571 1738 1688	1688 1750 1850	1504 1123 1404

		Cold	25
Dup 10000 21% ROH. 6 gms Liq.	10024	1450	1596
	10025	1487	1613
	10026	1446	1617
Dup 10024 RUN COLD	10027	1475	1586
	10028	1450	1563
	10029	1454	1583
Dup 10000 21% ROH. 9 gms Liq.	10030	1517	1363
	10031	1479	1313
	10032	1517	1450
Dup 10030 RUN COLD	10033	1525	1521
	10034	1508	1521
	10035	1525	1529
Dup 10000 21% ROH 12 gms Liq.	10036	1525	1213
	10037	1521	1108
	10038	1542	1167
Dup 10000 25% ROH 1 gm Liq.	10039	1679	1700
	10040	1625	1583
	10041	1667	1604
Dup 10039 RUN COLD	10042	1663	1763
	10043	1679	1750
	10044	1721	1804
Dup 10000 25% ROH 2 gms Liq.	10045	1700	1817
	10046	1696	1779
	10047	1704	1833

50	100	150	200	250	250½	Hot	300	Hot
1333 1719	1104 1246		Co					
1113 1613	1146 1300							
1600 1842	1033 1250		117					
1729	1679	1721	1333	1458			1396 1575	Cold 1217
1708	1658	1692	1333	1388			1442 1629	1079
1729	1663	1654	1438	1388			1288 1583	1221
1054 1564	500 500					350		
917 1161	500 750		39	Co	10027	1021	1302	8 sms
1275 1646	500 771					1021	1257	
1696	500		Co			1250	1496	
1721	500		39					
1729	500							
933 1198 X	500 X						Spilt	
933 1083 X	500 639 X		39				Rumbaker	
1031 1554	500 667 X							
1585	1521							
1425 X	1377 X		Co 126				Spilt	
1488	1383							
1733	1767		1677 1783	1596	1792	Cold 1813	1367 1629	796
1737	1738		1571 1721	1496	1672	1775	1277 1763	718 39
1771	1829		1717 1854	1696	1933	1822	1304 1629	688 over
1700	1696		1429 1792	1442	1713	608	over 1629	63
1696	1658		1421 1713	1379	1629	594		488
1708	1667		1354 1679	1379	1658	667		608
				over 10042				

	300	1/2	
10042	1605	1717	1076
	1576	1605	1046
	1729	1642	1163

	350		
10042	1617	1729	1250
43	1496	1663	1135
44	1685	1825	1308

		25		50	100	150	200	250	1/2			Outs
Dup 10045 RUN COLD 25%	10048	1779	1821	1800	1850		1708 1648	1783	1975	1967	1767	1996 1939
	10049	1746	1792	1758	1796		1621 1613	1725	1946	1943	1800	1992 1949
	10050	1767	1779	1771	1854		1708 1885	1783	1975	1963	1817	1971 1943
Dup 10000 25% KOH 3 gms L.O.H.	10051	1742	1933	1750	1492		1204 1169	1138	1671	1917		
	10052	1696	1879	1721	1500		1250 1179	975	1917	1932		
	10053	1717	1908	1729	1554		1272 1252	1208	1897	1967	300	
Dup 10051 RUN COLD 25%	10054	1667	1696	1671	1738		1571 1533	1558	1946	1929	1583	1929 1868
	10055	1650	1679	1646	1667		1529 1477	1646	1833	1563	1571	1875 1838
	10056	1675	1708	1654	1696		1583 1750	1696	1904	1938	1583	1917 1837
Dup 10000 25% KOH 4 gms L.O.H.	10057	1700	1817	1629	1296							
	10058	1708	1833	1696	1296							
	10059	1646	1775	1617	1283							
Dup 10057 RUN COLD	10060	1688	1783	1721	1696		1500 1510	1479	1793	1850	1380	1585
	10061	1600	1696	1667	1604		1483 1417	1417	1658	1813	1229	1971
	10062	1600	1700	1675	1608		1468 1528	1383	1575	1792	1096	1888
Dup 10000 25% KOH 6 gms L.O.H.	10063	1717	1833	1417	958							
	10064	1696	1775	1500	958							
	10065	1700	1758	1467	946							
Dup 10063 RUN COLD	10066	1658	1775	1675	1580							
	10067	1742	1779	1700	1608							
	10068	1742	1767	1725	1579							
Dup 10000 25% KOH 9 gms L.O.H.	10069	1600	1329	829	492							
	10070	1608	1379	946	583							
	10071	1629	1413	942	617							

	350		
10048	1833	2029	1579
49	1775	2046	1625
50	1858	2038	1633

			25	
Dup 10069 Run Cold	10072	1667	1638	
	10073	1567	1571	
	10074	1679	1638	
Dup 10070 25% Roth. 12 gm Lioth. 23.9 - 7.2 g	10075	1563	913	
	10076	1625	1354	
	10077	1658	1354	
Dup 10075 Run Cold	10078	1521	1292	
	10079	1663	500	
	10080	1633	1354	
Dup 10080 33% 1 gm Lioth. 7.2 23.9	10081	1908	1829	
	10082	1888	1833	
	10083	1950	1875	
Dup 10081 Run Cold 33% 1 Lioth.	10084	1875	1808	
	10085	1833	1813 *	Rod Split
	10086	1950	1871 *	Split
Dup 10082 33% 2 gms Lioth.	10087	1830	1896	
	10088	1763	1808	
	10089	1829	1833	
Dup 10087 Run Cold	10090	1775	1750	
	10091	1808	1808	
	10092	1750	1746	
Dup 10083 33% 3 gms Lioth.	10093	1763	1800	
	10094	1750	1750 *	Split
	10095	1771	1758	

Rod. Rod. Split & broken

Split & only ring broken

50	100	150	200	250	1/2 Hot					
1192 *	1008 *									
1125	1767									
1213	1080									
854	483 *									
938	538 *									
942 *	538 *									
629	558									
850 *	575 *									
625	583									
1833	1708	1308	1250 * 1721	1121	1608	992				
1792	1654	1318 *	1183 1908	1083	1583	1225				
1792	1567 *	1163 *	1008 2005 *	813	1038	946				
1829	1771	1600	1646 2146	1583	2146	1338	1713	2229		
1804 *	1738 *	1592 *	1646 2067	1588	2064	1313	1600	2096		
1921	1888 *	1696 *	1667 2129 *	1583	2038	1375	1667	2158		
1888	1500									
1883	1629									
1817	825 *									
1875	1825	1592	1604 2042	1417	1792	1493	1226	1582		
1954	1833	1592	1617 2038	1383	1746	1396	1167	1425		
1875	1696	1450	1563 2013	1308	1742	1333	1196	1521		
1817	1129									
1583 *	1000 *									
1750	1129									

Co gt. T. Elem only Ni

Co

Co & Ni T. E

Co

Co

Co

1140

Split

Hollow end
Hot off 200

					50	100	150	200	250	1/2	Hot	
Dup 10093 Run Cad	10096	1708	1863		1925	1738	1408	1279	1054	1191	942	Standards
	10097	1704	1833		1875	1708	1321	1221	950	1004	883	
	10098	1779	1938		1975	1688	1333	1217	946	1038	871	
Dup 10000 33% 4 gms Lio	10099	1467	1300	bad spot	1021							
	10100	1667	1608		1329		Co					
	10101	1667	1638		1192	1463						
Dup 10099 Run Cad	10102	1708	1917	spot.	1858	1463						
	10103	1667	1879		1833	1579	Co					
	10104	1704	1908		1854	1529						
Dup 10000 33% 6 gms Lio	10105	1692	1521		971							
	10106	1692	1446		892		Co					
	10107	1692	1471		875							
Dup 10105 Run Cad	10108	1796	1529	bad spot	1325	979						
	10109	1621	1779		1667	1304	Co					
	10110	1604	1779		1750	1329						
Dup 10000 33% 9 gms Lio	10111	1604	1392		583							
	10112	1604	1346		580		Co					
	10113	1567	1250	bad spot	725							
Dup 10111 Run Cad	10114	1563	1692	bad spot, [illegible]	1400	1096						
	10115	1796	1458		1000	767	Co					
	10116	1583	1633		1400	1067						
21 lb Coos 1½ 3½ 237' 46 lb ox 24 6.8 229 to 62 chgs 4500 milamp 1/4 [illegible] [illegible]	10117	1629	1508		1471	1438	1388	1388				
	10118	1633	1354		1221	1096	938	867				
	10119	1654	1546		1496	1479	1388	1379				

Dup 10117	10120	1517	1667
21% 2 grams LiOH:	10121	1529	1721
to Energy 1/4 [illegible]	10122	1513	1683
Dup 10117	10123	1558	1621
Charge 1/4 [illegible] 4500 mil amp	10124	1550	1638
[illegible]	10125	1538	1638
21%			
Rep Lubes 4 No2 for 1/2 [illegible]	10126	1754	1721
3½ 227 - 908	10127	1742	1683
21% 50 mily LiOH	10128	1763	1696
Dup 10126	10129	1783	1746
Run Cold	10130	1813	1713
	10131	1804	1746
Dup 10126	10132	1775	1746
21% 100 mily LiOH.	10133	1775	1729
Dup 10132	10134	1763	1804
Run Cold	10135	1779	1813
	10136	1779	1804
Dup 10126	10137	1771	1813
21% 200 mily LiOH	10138	1771	1788
	10139	1746	1800

50	100	150	200	Hot 200	250	½	Hot	300 New ½	
1621	1500	1333	1354 1177		1250	1480	871		Holland
1688	1608	1413	1379 1249		1325	1571	875		
1688	1625	1417	1400 1467		1300	1600	892		
1508	1354	1154	1071 1100		988	1000	293		Holland
1542	1472	1283	1221 1199		1100	1108	375		
1571	1542	1450	1375 1420		1350	1343	308	300	
1638	1558	1404	1375 1365		1238	1350	379	1271 1242	435
1592	1463	1350	1297 1347		1313	1335	354	1171 1500	409
1579	1450	1346	1354 1348		1310	1363	409	1300 1300	463
1804	1783	1717	1650 1750		1533	1700	1147	1483	1483
1717	1658	1500	1496 1470		1417	1583	1050	1254	1471
1738	696	1513	1480 1470		1333	1583	1070	1300	1500
1642	1538	1363	1354 1348	363	1358	1404	338	1292	
1700	1496	1392	1408 1408	408	1392	1458	334	1321	
1628	1400	1167	1062 1117	372	992	1029	372 Dead	954	
1850	1804	1796	1725 1788		1583	1750	1192		Sons
1854	1854	1771	1713 1788		1608	1758	1196		
1863	1821	1804	1750 1833		1700	1817	1188		
1813	1646	1525	1521 1467	1521	1500	1608	458	1479	
1708	1579	1396	1354 1450	442	1263	1363	447	1250	
1754	1629	1471	1446 1520	396	1417	1492	438	1354	
300				350	1433	1646	1063		
10134 1542		1683	Sons		1400	1658	1058		
1542		1688			1525	1717	1079		
1617		1721							

Dep 10137					10140	1754	1808																
Run Code					10141	1742	1783																
4.2 N°2 1/2 24.2					10142	1688	1717																
Dep 10126					10143	1683	1733																
21% 700 mlg LiOH.					10144	1688	1729																
Neo Gel N°2 1/2					10145	1717	1771																
Dep 10143	350				10146	1688	1738																
Cold	1538	1720	1733																				
	1625	1775	1758																				
	1613	1771	1763		10147	1683	1721																
Dep 10126					10148	1717	1754																
21% 700 mlg LiOH.					10149	1679	1746																
					10150	1692	1725																
					10151	1692	1775																
Dep 10149	350				10152	1692	1758																
Run Code	1729	1772	1808																				
	1667	1771	1779		10153	1688	1763																
	1696	1796	1796																				
					10154	1688	1733																
Dep 10126 - 21% 1 gram LiOH.					10155	1692	1725																
Hoops not to change location of any					10156	1696	1738																
lung only fill H_2O nebulizer and cleaning																							
Life - 48 hrs.					10157	1704	1729																
Dep 10155					10158	1646	1742																
except 21% 2 gram LiOH.					10159	1646	1704																
Don't change soil cleaning life					10160	1633	1742																
Dep 10155					10161	1638	1742																
21% 3 gram LiOH.					10162	1654	1725																
Don't change soil cleaning life					10163	1663	1767																
	350																						
10140	1525	1758	1133																				
41	1500	1733	1133																				
42	1604	1758	1175																				

50	100				10155 to 179																		
					1771																		
1854	1829				1771																		
1846	1829				1780																		
1792	796				1771																		
1621	1525				1366																		
1617	1396				1404																		
1713	1471				1542																		
1796	1738				1700																		
1783	1750				1742																		
1821	1788				1742																		
1667	1479				1369																		
1550	1404				1367																		
1658	1463				1417																		
1842	1800				1800																		
1829	1800				1788																		
1821	1817				1804																		
1725	1525				1475																		
1750	1333				1150																		
1692	1453				1204																		
1625	1333				1300																		
1463	1283				1192																		
1625	1383				1250																		
1488	1263				700																		
1417	1217				875																		
1467	1271				888																		
300																							
1604	1708																						
1663	1729																						
1667	1771																						

	25			50	100	150	200	200 Hot	250	Hot	Cap Hot 200
	1/15543 / 1861						Probably 5% load				
Dup 10155	10160										
25% 1 gram Lot.	10164	1854	1625	1592	1638		1317 1338	513	1292 1417	521	1200 93 110 Cap.
Dust change Sof during life	10165	1850	1633	1567	1575		1250 1443	525	1208 1240	538	Co
	10166	1819	1629	1617	1638		1167 1634	558	1194 1472	492	
Dup 10164	10167	1929	1688	1583	1642	1267	1217 1671		1142 1464	721	1000 93 110 Cap. 787
25% 2 gram Lott.	10168	1927	1700	1663	1842	1458	1371 1938		1229 1607	808	Co 875
Dust change Sof during life	10169	1950	1721	1654	1729	1433	1308 1750		1229 1621	726	817
Dup 10164	10170	1958	1725	1633	1750	1625	1463 1875		1363 1791	929	
25% 3 gram Lott.	10171	1988	1717	1493	1492	1333	1347 1619		1288 1614	1050	G 592
Dust change Sof	10172	1988	1721	1538	1704	1317 Fell	1250 1621	x	1042 Sound 1313	933	529
											588
Dup 10164	10173	1988	1738	1158	1379	1525	1083 1900				1267
25% 4 gram Lott.	10174	1971	1758	1413	1375	1450	979 1679				1229
Dust change Sof	10175	2021	1833	1563	1617	1508	1083 1735				1288
Dup 10164	10176	1963	1917	1608	1542	1417	1225 613				588
25% 6 gram Lott.	10177	1992	1925	1583	1333	1167	583 768				644
Dust change Sof	10178	2021	1850	1308	1300	767	579 639				583
Keptlike 1½ 3½ 247 4.14 No 2 ½ ft RQ 719	10179	1500	1242	1021							
Ground 2 hours filler Eng	10180	1475	1358	1200		Co					
21% 24 g	10181	1458	1308	1146							
Dup 10179 719 RQ	10182	1708	1746	1779	1758	1592	1492 1950		1492 1877	743	963
21% 2 gram Lott.	10183	1725	1746	1713	1683	1563	1063 1833		1375 1649	721	917 1
	10184	1733	1763	1767	1667	1529	1500 1750		1438 1638	729	917

Dup 10179 Run on 25% Roff, 719 Ra 2 hours	10185	1546	1150
	10186	1583	1283
	10187	1554	1296
Dup 10185 719 Ra 25% 2 grms Lioff. 2 hours	10188	1733	1679
	10189	1721	1654
	10190	1675	1679
Dup 10179 719 Ra 2 hours 29% Roff	10191	1492	1217
	10192	1546	1171
	10193	1508	1292
Dup 10191 27% 2 grms Lioff. 27 – 41 [illegible] 30% 2 grms [illegible] see Index Book.	10194	1833	1871
	10195	1850	1854
	10196	1854	1850
Dup 10179 Except Ra 719 - Burned 3 hours 21%	10197	1513	1388
	10198	1529	1342
	10199	1529	1496
Dup 10197 21% Roff 2 grms Lioff.	10200	1708	1775
	10201	1679	1758
	10202	1717	1775
Dup 10179 Except Ra 719 Burned 4 hours. 21%	10203	1629	1454
	10204	1608	1579
	10205	1592	1500
Dup 10203 21% Roff. 2 grms Lioff	10206	1742	1800
	10207	1729	1750
	10208	1742	1738

1854 Temp 100 mm 1/2 V 200 Cap Hot 200 Hot

50	100	150	200	200/2 Hot	250	Hot		
908		Co Mito E						
1163								
1138								
1721	1717	1483	1500 1496	908	1463 1446	671	900	
1658	1704	1404	1163 X 1150	898	1375 1446	646	898	Co
1685								
1071		Co Mito E						
938								
1133								
1854	1671	1363	1325 X 1496	938	846 X 1375	788	938	
1858	1629	1250	1242 X 1546	900	1075 X 1292	777	900	Co
1804	1658	1304	1129 1583 X	796	1125 X 1529	758	796	
1229		Co Mito E						
1117								
1350								
1767		1608 1738	1521	1554	1458 1650	797	797	Co
1779		1546 1583	1417	1746	1404 1446	748	748	
1750		1625 1800	1563	1725	1500 1592	808		
1250		Co Mito E						
1442								
375								
1750		1650 1592	1538	1746	1463 1583	783		Co
1750		1571 1792	1442 X	1554	1300 1417	700	700	
1583		1454 1621	1363	1529	1250 1583	609	700	

		25	50
Dup 10179 Except Ra 719 Drained 10 hours feeble lung — 21%.	10209	1579	1475 1329
	10210	1625	1467 1233
	10211	1608	1521 1379
Dup 10209 21% KOH 2 grams Lioh —	10212	1679	1763 1688
	10213	1692	1746 1642
	10214	1667	1763 1713
	10215		
	10216		
	10217		
	10218		
	10219		
	10220		
Kept 21 days in 6 lb 46 Elect Rogers tube — 6 amps 4.2 7.46 21 KOH 11206	10221	1738	1775
	10222	1754	1783
Dup — 21K 2 LiOH.	10223	1792	1938
	10224	1779	1950
7/21 - Taken out now keep 6 amps — made mistake gave 4.42 7.46 - Elect not [illegible] 21K 11235	10225	1700	1688
	10226	1667	1683
Dup 10225 21K 2 LiOH	10227	1692	1863
	10228	1763	1900
Dup 10225 Except frequency 10.3 of ex Elect not positive — 4.42 7.46 21K	10229	1696	1650
	10230	1700	1717
Dup 10229 21K 2 LiOH.	10231	1796	1900
	10232	1821	1883

	100	150	200	200 1/2	Hot	250 1/2	Hot	
	Co							
		1454 1613 / 1425 1583	1379	1521	663	1317	1483	693
			1400	1513	567	1325	1475	596
		1521 1704	1417	1575	717	1379	1460	675
	613 711 / 667 733			Juice Sent —				
	534							
	1/2 V 500 X		3 amps burnt					
	542 X		1 "					
	500 X		Split 2 Ramp burnt					
	1723 1788 / 1804 1856	1704 / 1713 1786	1579 / 1700	1688 / 1713	383 / 388	1738 / 1779	1750 / 1796	317 / 338
	1833 1915 / 1896 1958	1804 1928	1617	1654	908	1346	1617	829
		1743 1927	1625	1654	904	1417	1625	925
	1683 1815 / 1713 1785	Co						
	1875 1956	1758 1847	1658	1847	829	1558	1800	896
	1867 1918 / 1654 1847	1688 1913	1547	1679	988	1458	1667	771
	1697 1881	Co						
	1854 1968 / 1783 1882	1583 1792 / 1524 1654	1454 / 1367 *	1617 / 1506	800 / 733	1375 * / 1258	1538 / 1375	779 / 725

(Burned) 1 Ring

150 Hot

588 / 62 / 667 — Co

613 / 617 / 613

479 / 525 / 463

49 grams in 2 cell. Co

4 72 Co Lioh.

S.1 87 Co

		Cold	50	1/2	Hot	100	1/2	Hot	150	1/2	Hot	200	1/2	Cl	
7/21 RA greenly f 8-3 f.C on big tube chem 8-11 1/2 25. 8 Ramp	10233	1788	1746	1754	267	1605	1617	338	1625	1647		1642	1754	313	Co
	10234	1738	1708	1755	221	1550	1563	354	1550	1563		1642	1708	225	
Dep 10233 2 1K 2 1006	10235	1771	1879	1938	575	1854	1913	958	1813	1963	853	1613	1950	708	Co
	10236	1804	1896	1942	550	1888	1938	1027	1750	1913	804	1558	1833	704	
7/18 RA greenly f 8-10 green from dark mole 8-16 f. 4-4 21 1.100 green lively 11081 21K 21K	10237	1800	1667	1696	267	1446	1500	458	1417	1454	325	1417	1458	300	Co
	10238	1833	1700	1738	275	1588	1550	467	1463	1500	392	1475	1500	280	
Dep 10237 21K 2 1006	10239	1742	1517	1667	438	1321	1554	846	1250	1300	608	1179	1250	625	
	10240	1742	1692	1775	423	1388	1538	871	1313	1383	638	1196	1283	676	
Long tubes from Rogers Cole that goes only 140- 2 fe 21K 2 1006	10241	1742	1856		2033	713	1667	1933	738	1604	1917	971	1467	1642	654
	To	1754	1908		2004	754	1667	1958	800	1566	1842	863	1450	1617	721
	10246	1675	1796		1879	742	1617	1938	779	1500	1733	742	1417	1592	733
		1721	1896		2021	771	1667	2063	783	1604	1983	733	1467	1696	788
		1733	1908		1946	771	1600	1929	733	1450	1646	679	1367	1521	688
		1713	1875		1917	838	1617	1950	713	1500	1917	792	1433	1679	808
												6	8601		
													1437		
Long tubes by Rogers before putting on Cole.	10247	1692	1833		1913	783	1592	1925	708	1500	1738	783	1429	1608	721
	To	1683	1833		1946	729	1667	1983	700	1521	1842	708	1508	1700	742
	10252	1667	1817		1875	696	1667	1983	696	1542	1975	767	1508	1771	750
		1613	1796		1833	679	1813	2071	783	1779	2158	800	1596	2188	792
		1700	1817		1888	713	1629	1946	725	1500	1642	758	1392	1696	729
		1700	1817		1954	729	1629	1897	679	1600	1938	783	1475	1742	754
										1575		6	9908		
													2184		

			50	1/2	Hot				150	1/2	Hot					
Dup 10257 only made 28 foot — 24 of 728 gr from Rogers 11404	10253	1658	1292	1713	517				1208	1367	688					
	10254	1696	1608	1705	529				1292	1567	708	1276	1438	725		LOE Cut open
	10255	1675	1625	1733	576				1238	1417	738	1238	1304	668		
									1246			1257				
Tubes gone to Inc for Rogers 781 Dr 26427 Center 8X Lorne Clinic H. Tubes were from same	10256	1713	1742	1763	576				1696	2068	750	1608	2083	742		
	10257	1717	1721	1733	571				1750	2075	807	1625	2042	750		
	10258	1750	1729	1750	558				1713	2021	771	1608	1942	688		Co
	10259	1663	1738	1763	563				1871	2075	813	1717	2079	846		
	10260	1758	1767	1779	513				1867	2158	813	1642	2113	842		
	10261	1729	1738	1750	513				1713	2058	750	1600	2050	850		
												b 9861 1643				
Tubes for Rogers 26427 730 gram	10262	1604	1767	1788	421		1842	1942	746	1796	2013	758	1729	1979	913	Tubes alone split
	10263	1588	1779	1808	446		1883	1979	871	1875	2067	688	1833	2017	933	
	10264	1617	1779	1804	479		1867	1958	936	1858	2075	796	1733	1996	913	
													3 5793 1768			
Tubes for Rogers 28 fl 730 Rcl — 28 fl	10265	1617	1767	1938	488		1838	2025	992	1574	1875	808	1450	1713	792	
	10266	1717	1825	1875	467		1763	2029	892	1488	1796	583	1442	1708	729	
	10267	1721	1846	1888	457		1792	2033	804	1554	1867	683	1575	1671	775	
										1558 5.19			3 4467 1487			
Tubes for Rogers flab 29 730 Rcl —	10268	1713	1808	1858	383		1646	1917	692	1463	1679	621	E cut open			Co
	10269	1733	1788	1863	429		1550	1871	679	1408	1546	633	1387	1479	620	Bad flab Little blebs
	10270	1725	1867	1933	479		1663	2092	821	1646	1988	708	1588	1829	698	
													2 2975 1462			
																gw 8/4 E

	Cad	50	½	4
Tubes for Rogers Pa 730 no Bogie Accumulator	10271	1729	1883	1908
	10272	1717	1854	1888
	10273	1725	1829	1871
Tubes for Rogers 730 Ra 32 ft Bogie Accumulator 2 bolt	10274	1738	1854	1908
	10275	1742	1825	1867
	10276	1758	1871	1917
Rogers Tubes 34 ft 730 Ra	10277	1733	1804	1829
	10278	1729	1829	1854
	10279	1696	1768	1792
Rogers Tubes 35 ft 730 Ra	10280	1713	1792	1813
	10281	1655	1750	1788
	10282	1654	1708	1725
Rogers Tubes 36 ft 730 Ra	10283	1779	1850	1879
	10284	1804	1888	1921
	10285	1767	1858	1883
	10289	1688		
	10290	1675		
Thru 21 ft mag	10291	1708		
Thru 9 ft 2 bolt	10292	1613		
	10293	1638		
	10294	1433		
	10295	1292		

100	½	Hot	150	½	Hot				
1950	2054	954	1771	2071	763				
2058	2169	1058	1967	2229	776	1746	2046	656	Co
1863	2033	963	1646	1949	729	1542 / 3 / 4626 / 1540	1837	813	Giants Co
1950	2083	942	1667	2063	758	1617	2038	850	
1842	2021	854	1563	1808	667	1479	1713	804	Co
1808	2029	672	1458	1792	658	1425 / 3 / 4521 / 1507	1709	773	
1883	1958	821	1854	2021	663	1858	1992	763	
1925	2013	875	1938	2063	758	1900	2063	775	
1833	1938	842	1771	1958	688	1733 / 3 / 5491 / 1830	1950	700	
1904	1963	967	1908	2050	754	1850	2021	721	
1858	1946	863	1817	1979	667	1779	1958	654	
1768	1863	554	1667	1833	504	1704 / 3 / 5035 / 1777	1850	375	
1958	2025	904	1854	2050	679	1704	1925	629	
1958	2104	638	1696	1975	588	1600	1821	625	
1904	2013	771	1771	1996	546	1704 / 3 / 5004 / 1669	1917	633	

	10296	1575				
	10297	1242				

George Spencer

		400	1/2	H	
Tubes for Rogers 27 f 730 gr & Rings	10262	1729	2167	1233	Spent
	10263	1875	2167	1188	
	10264	1692	2046	1146	
Rogers tubes fl 34 730 green	10277	1863	2238	1197	
	10278	1900	2192	1358	
	10279	1708	2075	1133	
Rogers Tubes flocks 35 730 green	10280	1792	2158	1167	
	10281	1721	2063	1092	
	10282	1525	1850	908	
		250			
Tubes for Monahan OX + Mitt. f 15 A 732 green	10286	1858	1783	883	
	10287	1688	2042	871	
	10288	1708	1979	1029	
		900			
3 tubes from Bat Co Solid Ends 738 gr 18 A f	10308	1821	1975	980	
	309	1750	1917	921	
	10 310	1804	1946	921	
Dup — Hollow cupped Ends	10311	1763	1917	964	
	10312	1738	1883	958	
	10313	1717	1904	971	

Spl'ct Spl'ct

				550		
10262	1738	2117	1171	1675	2025	1188
10263	1583	2175	1125	1758	2083	1121
10264	1655	1975	1054	1458	1971	988
10277	1963	2292	1117	1813	2146	1033
278	1929	2154	1017	1768	2075	996
279	1804	2142	1004	1696	2013	921
10280	1846	2117	979	1760	2008	
281	1875	2158	1000	1696	2038	
282	1625	1913	963	1558	1850	
	350			400		
10286	1458	1729	933	1400	1604	838
87	1675	1979	954	1609	1946	896
88	1696	1971	983	1625	1925	921
	300					
10308	1867	1967	917	1758	1954	929
309	1817	1958	938	1721	1950	933
310	1871	1979	946	1771	1992	896
	300					
10 311	1846	1967	988	1767	2008	958
12	1800	1896	929	1717	1883	829
13	1825	1925	793	1717	1883	688

739 – Ins 32 mi 40 155 ft
silk 25 [illegible] after [illegible]
[illegible] 25 aq –
Rinsing [illegible] at 5 lumps
B works

		100	1/2	H	
10340	1768	1892	783		
10341	1804	1938	741		
10 540		Cold			
		150			
10342	1742	1813	1867	613	
10343	1721	1846	1900	683	
10344	1779	1888	1942	675	

Rep long tubes from Bally Co of no or ch. To test of graft and post rings on [illegible] 21K2 L
after 50 min change to plain 21K

	250		
10340	1813	1892	785
341	1871	1946	771
	100		
10342	1729	1754	
43	1775	1805	
44	1796	1821	

Clean in 21K only for 50th min

		50	
10345	2058	2096	1396
346	2121	2158	1417

250			
10340	1700	1921	688
41	1821	1971	692

Carried forward

	250	1/2	Half
10262	1917	2000	927
10263	1808	2038	938
10264	1758	2009	917
10277	1883	2079	1083
10278	1917	2113	1075
10279	1721	1954	875
10280	1783	2000	958
10281	1750	1963	775
10282	1667	1854	729
	104		
10286	1829	1963	663
10287	1863	1992	713
10288	1800	1904	713
	50		
10289	1588	1592	250
10290	1625	1663	454
10291	1729	1763	550
10292	1633	1658	475
10293	1729	1746	500
10294	1396	1454	379

300	1/2	H
1725	1775	996
1738	2017	999
1729	2008	817

450	1/2	H
1688	2075	1004
1863	2163	1317
1633	1975	1138
1938	2225	1472
1908	2176	1350
1775	2133	1213
1775	2104	1250
1771	2096	1175
1583	1979	1029

		50	1/2	Half	
	10295	1417	1450	342	
	10296	1738	1775	467	
	10297	1521	1554	333	
		Fed			
2 holes 2 lb lot B, flame	10345	1892			
Same in the 3 cycle water for boiler	10346	1917			
		50			
	10308	1750	1808	483	
	10309	1696	1746	500	
	10310	1750	1792	500	
	10311	1750	1813	308	
	10312	1663	1725	458	
	10313	1688	1750	529	
	10340				
	10341				
			50	1/2	H
	10342		1667	1692	763
Champ to plain	10343		1725	1742	829
21K after 50 hot	10344		1750	1779	888

Lower 21K

100	1/2	H
2004	2088	1496
2025	2108	1525
250	1/2	H
1821	1975	921
1754	1921	958
1813	1958	942
1758	1942	1025
1733	1896	917
1738	1900	933
150		
1800	1900	738
1800	1900	796

600	1/2	H
10262	1625	2042	871
10263	1721	2113	1125
10264	1396	1738	988
10277	1733	2154	1021
10278	1717	2063	958
10279	1646	2054	958
10280	1683	1992	1017
10281	1721	2104	1042
10282	1546	1863	950
450			
10286	1321	1625	942
10287	1521	1863	946
10288	1583	1867	963
400			
10308	1721	1971	913
10309	1688	1963	933
10310	1733	1992	904
10311	1717	2000	929
10312	1683	1900	946
10313	1688	1896	908

650	1/2	H	700	1/2	H
1592	2000	1050	1563	1938	1092
1563	1958	1096	1479	1850	979
1242 xs	1596	1000			
1663	2083	1108	1575	2033	1071
1683	2083	1108	1571	1971	996
1604	2096	1043	1525	1933	983
1604	1921	1042	1450	1808	871
1654	2042	1038	1513	1850	883
1404	1750	971	1413	1704	854
550					
1254	1500	933	1250	1508	863
1454	1775	975	1375	1754	921
1471	1854	988	1442	1804	1025
450			500		
1658	1921	958	1629	1983	1096
1596	1958	979	1604	1967	1058
1633	2021	1000	1546	2033	1042
			500		
1596	2033	1033	1447	2113	1038
1638	1904	979	1571	1929	1000
1617	1933	992	1563	1979	1008

	750	1/2	1r	1000				
10262	1521	1729	613	1238	1317	933		Elements
263	1438	1804	704	1013	1221	883		saved
264	—	—						
10274	1605	2005	682	1333	1429	917		Elements
275	1492	1864	608	1354	1433	875		saved
279	1542	1871	583	1313	1383	813		
				1000				
10280	1438	1738	558	1415	1508	913		
281	1517	1883	496	1475	1580	967		
282	1400	1721	546	1238	1300	879		
				850	1/2	1r		
10286	1367	1719	563	1083	1167	875		Saved
287	1385	1679	504	1213	1272	888		Elements
288	1392	1729	563	1279	1392	925		
				800	1/2	1r		
10308	1650	2050	621	1554	1619	942		
309	1625	2004	621	1567	1663	942		
310	1604	2096	642	1567	1700	1008		
				900				
10311	1425	2158	596	1625	1821	1021		
312	1513	2000	584	1600	1725	833		
313	1604	2048	563	1604	1746	1004		

	300	1/2	H	
10310	1713	1913	767	
10311	1775	2000	800	
	200			
10342	1788	1908	738	
10343	1829	1938	833	
10344	1875	1997	857	
	150			
10345	1958	2058	1592	
10346	1967	2150	1642	
	Cold			
10347	1346			
48	1350			
49	1267			
10350	1996			
51	1479			
52	1379			
	400			
10340	1550	2004	846	
10341	1554	2104	963	

350	1/2	M	300	1/2	H				
1583	1946	867							
1679	2058	938							
250						600	1/2	H	
1700	1938	875	1567	1975	913	1425	1488	879	
1725	1958	892	1600	1946	925	1479	1558	892	
1854	2046	875	1663	2013	917	1529	1633	738	
200			250			550	1/2	H	
1858	2150	1663	1721	2175	1563	1625	1758	946	
1754	2083	1592	1663	2083	1592	1458	1604	1027	
450			900	1/2	H				
1425	2063	500	1654	1729	900				
1604	2208	604	1679	1767	913				

	350			
10342	1471	1929	638	
343	1429	1950	600	
344	1625	2000	558	
	200			
10345	1667	2221	1025	
346	1667	2100	1063	

[ITEM FOUND IN BOOK]

Reg

Double

739 159 48 1196 1288 1358 1308 1282

Single

854 159 48 1302 1325 1268 1240

B1

Double

739 70B1 48 1341 1341 1432 1345 1283

739 2.6B1D 48 1465 1436 1435 1324

~~739 2.6B1 48 1465 1481~~

Single

854 2.6B1 48 1481 1402 1331 1401

719 2.6B1 48 1431 1431 1444 1368

1164 2.6B 48 1515 1566

[ITEM FOUND IN BOOK]

Single Cr

			100
719	2 lb lot	4 — 24	1418
719	15% Reg	4 · 24	1132
719	2 lb lot	4 — 36	1442
719	Reg —	4 36	1242
719	2 lb lot	4 48	1431
719	Reg	4 - 48	1304

1304
1242
2546

Single		Double	
Reg			
24	1132		
36 —	1242	36	1314
48	1304	48	1288
Bi			
24	1418		
36 —	1442	36	1425
48	1431	48 —	1341
60		60	1260
72		72	1186

[ITEM FOUND IN BOOK]

		-100-
739 Reg —	4.-36-	1325-
		1303
Bi-70 gm-	" "	1434
		1416

Reg Tampa

739 Reg	4. 48	1288
		1282
739 Bi	4 48	1341
739 Bi	4- 60	1246
		1278

739 Reg	4. 70 only-	1201
		1209
739- Bi 2lb-4	-70 gm	1186
739 2lb	4 60	1311
739 2lb	4- 48	1436

[ITEM FOUND IN BOOK]

				Single	Double
Req-	4	.24 —	719	1132	—
Req	4	36	719	1242	1325 @ 1303
Req	4	48	719	1304	1288 739
Req	4 -	70	719		1205
		2664			
Bi	4 -	36 —			
Bi	4	48		1431	1341
Bi	4	60			1311

[ITEM FOUND IN BOOK]

1588	859-	26	4.4	24	1484	1418	1368	1416		
1594	859	159	4.2	24	1248	1210	1193	1180		
1600	859	26 (6)	4.5	48	1481	1402	1331	1401		
1606	859	159	4.2	48	1302	1325	1225	1244		
1835	1164	159	4.2	24	1225	1316	1311			
1888	1164	159	4.2	36	1310	1411	1364			
1891	1164	159	4.2	48	1316	1443	1406			
2075	1164	159	4.5	36	1331	1379				
2084	1164	159	4.5	48	1380	1447				
2090	1164	159	4.4	60	1328	1382				
2096	1164	159	4.4	72	1248	1363				
2102	1164	26 (6)	4.3	36	1361	1399				
2108	1164	26 (6)	4.3	48	1510	1566				
2284	1164-1165	159	4..	48	1404					

[ITEM FOUND IN BOOK]

Double Tamp

				50	100	150	200	250
739	159	4.2	35.8	1191	1303	1330	1353	1308
739	70 lb.	4.6	24	1513	1521	1410	1394	
739	70 lb.	4.6	35.8	1425	1439	1374	1298	1237
739	159	4.3	47.7	1196	1268	1358	1386	1252
739	70 lb.	4.7	47.7	1341	1341	1432	1345	1283
739	159	4.4	59.7	1225	1275	1261	1240	1236
739	159	4.4	70.2	1227	1207	1209	1156	
739	266 lb.	4.6	70.2	1256	1186	1269	1206	
739	266 lb.	4.6	60.3	1375	1311	1387	1301	
739	266 lb.	4.6	48	1468	1436	1435	1324	
1164	266 lb.	4.6	24	1382	1331	1424	1483	
1165	266 lb	4.6	24	1332	1355	1489	1438	
1201	266 lb	4.6	24	1415	1366	1446	1444	

Single Tamp -

719	266 lb.	4.4	24	1468	1415	1353	1374	
719	159	4	24	1149	1132	1174	1207	
719	266 lb.	4.4	36	1425	1442	1427	1453	
719	159	4.4	36	1192	1242	1245	1275	
719	266 lb.	4.4	48	1431	1431	1444	1465	
719	159	4	48	1254	1304	1308	1322	
854	159	4	36	1312	1320	1357	1298	
854	266 lb.	4.4	36	1485	1437	1448	1432	

Notebook, N-09-02-25.1

Lenght of stock for long tubes made by hand 5½" long

Lenght of tube when finished 4.472 long

All long tubes should be soaked for 24 hours before putting on board.

Long tubes

10000 21 hole ⌀5 2 3½ lb wt

Req Tubes – 708 Big drum green Thru 20 mesh. 7 flake oxidized & reduced hydrogen [general flake] 24 green

Layer loading

21% KOH. 1 gram 1.0 H. each cell

average flake 7.3	342 dumps	Wt	11.200.
" green 24.			
10001	341 dumps	Wt	11.367.
10002	333 "	Wt	11.253.

10003 Dup 10000
Except RUN COL□

	337 dumper	LOT	11.216
10004	332	LOT	11.293
10005	328	LOT	11.310

10006 -

Dup 10000
Except 21% KOH 2 grms Li OH
each cell -

	331 clumps	Wt	11.247
10007	332	Wt	11.203
10008	332	Wt	11.485

10009

Dup 10006
Except RUN COLD

	346 dumps	Wt	11.609
10010	346	Wt	11.547
10011	334	Wt	11.352

10012 Dup 10000

Except 21% 3 grms VIOA each cell

336 dumps lot 11.488

10013 330 " lot 11.320

10014 331 " lot 11.445

10015

Dup 10012

RUN COL II

	328 dumps	1 cof	~~11.500~~ 11.405
10016	329 "	1 cof	11.350
10017	331 "	1 cof	11.317

10018 Dup 10 000

21% KOH. 4 grms √ 1 oft Each cell

306 dumps lot 11.402

10019 320 " lot 11.550.

10020 337 " lot 11.572

10021

Dup 10018

RUN COLD

	330 dumps		Wt	11.331
10022	328	.	Wt	~~11.165~~ 11.265
10023	328	.	Wt	11.343.

10024 Dup 10000

21% KOH, 6 grms LiOH Encl. cell.

32g dumps lot ~~11.356~~ 11.456

10025 32b " lot 11.547.

10026 32d " lot 11.318

10027 Dup 10024

RUN COLD

	348 clumps.		Wt	11.563.
10028	336	.	Wt	11.555
10029	325	.	Wt	11.362

10030

Dup 10000

21% KOH. 9 grms LiOH Each cell

	330 dumps		Wet	11.390.
10031	333	"	Wet	11.330
10032	330	"	Wet	11.630 ?

10033

Dup 10030

RUN COLD

average flake 7.4 Wt

" grain 24.1

334 dumps

10034 346 " Wt 11.498.

11.434.

10035 365 Wt ~~11.715~~

10.715

10036

Dup 10000

21% KOH. 12 grms LiOH.

Each cell.

	363 dumps	Wt	11.232
10037	348 "	Wt	11.186.
10038	368 "	Wt	11.465.

10039 — Dup 10000.

25%. KOH - 1 gram LiOH Each cell.

Filelee average 7.1
Green " 23.8

10034 Chg iron.	343	dump	Wt	10.977
10040	341	.	Wt	10.819
10041	340	.	Wt	11.135

Same 1034

10042

Dup 10039

RUN COLD

	338	dumpie	Wt	10.919
10043	332	·	Wt	~~10.036~~ 11.036
10044	325	·	Wt	10.971

10045

Dup 10000

25% KOH, 2 grms √ 10 cc

Each cell

Flaked 7.1	329	dumps	lot	11.097
Green 23.8				
10046	317	"	lot	11.157
10047	313	"	lot	11.020

Drum 1084

10048

Dup 10045

RUN COLD

Flakes average 7.1
Green " 23.8 3½ dumps Wt ~~10.707~~ 10.827

10049 341 . Wt 10.995

Smoked and cured 10050 335 , Wt 11.039
Fred changed Stirrer to a three tooth one instead of pin as it was, because pins bent and broke off so often.

10051

Dup 10000

25% KOH 3 grms [illegible]

Hlabe 7.1 329 drumpo Wt 11.001

Grew 23.8

10052 332 " Wt 11.293

10053 331 " Wt 11.299

Drow 1084

10054 Dup 10051

RUN COLD

Flaked 7.1	327 dumps	Cut	11.131
Green 23.8			
10055	316	Cut	10.928
10056	326	Cut	11.205
Iron 108%			

10057

Dup 10000

25% KOH. 4 grms of 10% Znacetate

Flake 7.1
Brew 23.8

317. dumpos Wet 11.501

10058 316 " Wet 11.117

10059 302 " Wet 11.028

Brew 100%

10060

Dup 10057

RUN COLD

Flake 7.1	317 dumps	lot	11. 535
Green 23.8			
10061	301 "	lot	11. 255
10062	308 "	lot	11. 121

Drain 1084

10063-

Dup 10000

25% KOH. 6 grms Li OH Endicott

Elabw 7.2 3/6 dumps Wt 11.155

Green 229

10064 3/8 " Wt 11.185

10065 3/6 " Wt 10.965

Draw 1084

10066

Dup 10063

RUN COLD

Flotation average T.I.
Grain " 25.9. 318 dumps Wf crackdown 10.770

10067 328 " Wf 10.920

10068 326 " Wf 10.905

10069 Dup 10000

25% KOH 9 grms LiOH Excell Cell

Yellow 72 305 dumps lot 10.770

Green 239

10070 304 . lot 10.930

10071 322 . lot ~~10.09~~ 11.028

Green 108

10072

Dup 10069

RUNCOLI

31 f dump: Wet 10.928

10073-318 - Wet 10.845

10074-321 - Wet 11.115

10075

Dup 10000.

25% ROH 12 gms LiOH, EtOH, cell

Drawn 23.9
Filtered 7.2

3/8 dump Cut 10.920

10076 31f. Cut 11.050

10077 35s. Cut 11.250

Draw 100%

10078 Dup 10075

RUN COLD

327 clumps Lot 11.175

10079 331 " Lot 10.530

10080 336 " Lot 10.624.

10081

D-up 10000

33% KOH. 1 gm LiOH Each cell

Filled 7.2 372 dumps Cut 10.610

Green 23.9

10082 358 " Cut 10.395

10083 351 " Cut ~~10.453~~ 10.553

Green 28.1

10084 Dup 10081

RUNCOLD

352 clumps lot 10.585

10085 357 · lot 10.585

10086 360 · lot · 10.705

10087 Dup 10.000

33% KOH 2 grms 1 ~~KOH~~ each cell

Flake Green 356 dumps lot 10.698

10088 352 . lot 10.718

10089 353 . lot 10.688

10090.

Dup 10087

RUNCOLI

	349 dump.	Wet	~~10.645~~ 10.545
10091	357	Wet	10.743
10092	354	Wet	10.676

10093 Dup 10000

33% Rott. 3 grms 1.0 N Fecal cell

350 dumps Cat ~~10.13~~ 10.530

10094 ~~352~~ 353 " Cat 10.6%

10095 354 " Cat 10.765

10096 Dup 10093

RUN COLD

35 / dumps COT 10.745

10097 34¢ · COT 10.580

10098 35¢ · COT 10.700

10099 Dup 10 000

33% KOH. 4 grms LiOH Eacacell

3/8 dumps. lot 10.660

10100 3/8 . lot 10.650

10101 3/49 . lot 10.570

10102

Dup 10099

RUN COLT

	347 dumper	Colt	10.620
10103	348 .	Colt	10.380
10104	350 .	Colt	10.545

10105

Dup 10 000

33% Rott. 6 grms di OH Each
CCCl –

353 dumps lot 10.400

10106 351 " lot 10.500

10107 360 " lot ~~10.575~~ 10.575

10108 Dup 10105

RUN COLD

356 dumps LOT 10.880

10109 352 " LOT 10.502

10110 ~~330~~ 349 " LOT 10.327

10111 Dup 10 000.

33% KOH, 9 grms of LiOH Eaton & Coff

347 drops. Cut 10.777

10112 349 " Cut 10.720

10113 347 " Cut 10.720

3 | 32217
10,739

10114 Dup 10111

RUNCOLD

	344 cleanings	Wt	10.750
10115	349 "	Wt	10.442
10116	348 "	Wt	10.648

10117

21 Hole 005 $1\frac{1}{2}$ $3\frac{1}{2}$ 237

7 flake General Oxidized

24 705 Big Drum –

21% KOH.

To 6E charged 4500 milampere hours at 1/4 of the Regular rate, & discharged Regular rate.

See flake 68
Screen 239
~~337~~ 104 thin irons bracket and 339 duplicate flat 10.823

10118 337 - Wf 10.806

10119 336 - Wf 10.812

10120

Dup 10117

21% KOH, 2 grms 2.048 –

to be changed 1/4 Req rate,

331 dump Wet 10,648

10121 Unbaked end 334 " Wet 10,720

10122 332 " Wet 10,743

10123

Dup 10117

Charged 1/4 rate 4500 milamp

discharged only to 75% of Capacity (estimated) 30 times - then charged & discharg reg rate

21% KOH

330 dumped Cof 10.808

10124 330 " Cof 10.752

10125 335 " Cof 10.742

10126 Long Cans

Reg long tubes 4 ~~x~~ 2 ½ thick
square flake oxidized are reduced by
Hydrogen 3 ½ 237 708 Bd green

21% Containing 50 milligrms Lift each cell.
Water 5.1
Grain 22.9

353 dimpl Wt 10,325

10127 353 " Wt 10,197

10128 346 " Wt 10,070

10129

Dup 10126

Except Run Cold

Cracked and 367 dumped		Wet	10.030
10130 " " 360 "		Wet	10.075
10131 " " 358 "		Wet	10.090

10132

Dup 10126.

21% ROH. 100 mlg LiOH Each cc —

Cracked and 355 dumpe Cot 9.935

10132 1/2 359 " Cot 10.010

10133 Cracked and 358 " Cot 10.035

10134

Dup 10132

Except RUN COLD

Cracked end	361 dumper	Wt	10.020
10135 Cracked end	359	Wt	10,095
10136 " "	358	Wt	10,000

10137

Dup 10126

Except 21% ROH, 200 mlg/100ml Excel acid

	351 dup	100	9.995
10138	355 "	100	10.100
10139 freshwd and	247 "	100	10.005

10140

Dup 10137

Except RUN COLD

Charlie end 360 dumps		Wt	10.100
10141	356 "	Wt	9.965
10142	344 "	Wt	10.221

#1234124 Flatbed, on #10142
Flatbed 4.324
Sheen 234.2

Weights backed up —
Weights should have been corrected

10143

Dup 10126

21% KOH. 400 mlg & 10 H Each cc

Green 242 (lake) 4.2

346 dumpse Wt 10,265

10144 343 " Wt 10,372

10145 348 " Wt 10,337

new batch off lake from this group now

10146 Dup 10143.

Except RUN COLD

347 Dunfee Lot 10,222

10147 Threshed and 346 " Lot 10,217

10148 352 " Lot 10,358

10149

Dup 10126

21% KOH. 700 mlg LiOH Each cell

347 dumped LOT 10.283

10150 . 348 " LOT 10.243

10151 342 . LOT 10,313

10152

Dup 10149.

Except RUN COLT

302 dumps LOT 10,280

10153 bracket end 341 " LOT 10,234

10154 339 " LOT 10,244

10155

Dup 10126

Except 21% KOH, 1 gm. LiOH each cell-

Hooper not to change the solution at any time only fill with water - Be careful that when they run on board the solution is not changed want same solution during whole life of the cell.

=1123+1124 Black 4.2 339 dup WT 10232
Green 24.2
10156 339 " WT 10248

10157 339 " WT 10284

10158

Dup 10155 -

Except 21% KOH 2 grms LiOH in each cell
Don't change the solutions at any time -
during whole life of the cell

346 dup [illegible] 10,318

10159 347 " [illegible] 10,247

10160 broken down 339 " [illegible] 10,259

10161

Dup 10155

Except. 21% KOH 3 grms. 1% KOH. each cell

Dont change the solutions during the cobalt life of the cell

	342 grms per	Wt	10,335
10162	335 "	Wt	10,227
10163	340 "	Wt	10,276

10164

Dup 10155

Except 25% KOH, 1 gm LiOH Excellent

Don't change solutions during whole life of the cells.

340 dumpel lot 10287

10165 bracketed end 344 " lot 10337

10166 " " 337 " lot 10227

10167

Dup 10164

25% NBH, 2 gms of OH Each cell

Dont change the solutions during whole life of the cell

345 passage Wt 10,292

10168 343 " Wt 10,236

10169 340 " Wt 10,328

10170

Dup 10164

25% KOH 3 gms & 10% Each as CC

Dont change solution during whole life of the cell —

327 dum/gr (Wt 10,282

10171 343 " Wt 10,390

10172 343 " Wt 10,260

10173

Dup 10164

25% KOH, 4 gms ∝ KOH Each cell

Dont change the variation during whole life of the cell —

349 dup for WOT 10.174

10174 351 " WOT 10.240

10175 Crackled and 349 " WOT 10.241

10176

Dup 10164

25% ROH. 6 gms KOH Each cell

Dont change solution during whole life of the cell —

349 dumps lot 10,218

10177 346 " lot 10218

10178 350 " lot 10,311

10179 Dust fall below 4 mlg flake —

Reg. Long Tubes – 3½ 237

No 2 ½ thick flake 4 mlgms - oxdized -

24 mlg RA 719 - Drained in

fetter bag 2 hours

21% KCl,

1 flake 4.4 moisture cont 40% dampness Wt 11.384

Green 24.0

10180 38c . Wt 11.238

10181 39c - Wt 11.347

$$3\overline{)33969}$$
$$11323$$
$$8\,45$$
$$5661\,5$$
$$5297$$
$$4\,584$$
$$9\,5679 \quad 35$$

9.56

10182

Dup 10179

21 %. KOH 2 grms 2.0H.

391 dumpe Wt 11.211

10183 382 " Wt 11.195

10184 400 " Wt 11.319

3) 33725

11242

10185 –

Dup 10179

Run in 25% KOH –

	381	dup of Wt	11.269
10186	382	" Cof	11.321
10187	383	" Cof	11.360

$3\overline{)33940}$

11313

10188

Dup 10185

25% KOH 2 grams 1 oft.

Shakedown 376 dumps 1 oft 11252

10189 377 " 1 oft 11249

10190 379 " 1 oft 11221

3 | 33722
11261

10191

Dup 10179

Run in 27% RQH.

	376 dup	Wet	11,281
10192	377 "	Wet	11,285
10193	378 "	Wet	11,308

3 | 33874

11291

Dif Sqr flake —

10194

Dup 10191

27% KOH 2 grms 2.10 —

Green 24.0
Flakes 14.1 385 dumped COH 11.156
#123+124 flakes
10195 Screened out 385 " COH 11.130

10196 380 " COH 11.207

This group was made from a new lot of Ni flake square punched through 16 on 30 mesh. Flakes not quite as bulky as the last lot 121+22 Yesterday had trouble to get copper out as some of punched were dull + threw out over — hence green. Considerable longer time in liquor — probably could not talk due to many leaves stuck together —

10197

Dup 10179

Except 719 Ra Drained in filter bag 3 hours

21% KOH,

=424-27 Filter 4.1
Green 24.3

363 dumper Wet 10.986

10198 367 " Wet 10.890

10199 Greenhead-cut 347 " Wet 10.965

10200

Dup 10197

21% NaOH 2 grams LiOH

Cracked end 346 dumpe Wt 10.970

10201 340 " Wt 10.880

10202 Cracked end 339 Wt 10.902

10 203

Dup 10179

Except RQ 719 Drained

in filter bag 4 hours

21% Nott.

2/12/24 Filtrate 4.1

Green 24.0 385 dirty Clear 11.511

10204 385 " Clear 11.426

10205 382 " Clear 11.484

10206

Dup 10203

21% Nott 2 gms (10206)

371 dumped Wt 11,444

10207 shelled and 382 Wt 11,459

10208 384 Wt 11,547

10209

Dup 10179

Except RA 719 Drained

in filter bag 10 hours

2 1/2 ~~Not~~ —

Flake 4.1

Green 24.2

329 dumped Uf 10499

10210 checked and 335 Uf 10479

10211 332 Uf 10410

10212

Dup 10209

210/ KOH, 2 gmw L. OH.

330 duplicate Wf 10,404

10213 331 " Wf 10,500

10214 finished and 329 " Wf 10463

10215

3 Tubes Rogers new Tubes
Reed Jenny 212 These tubes have
one row of perforations left
off next to Pan - 4 #3 flake
acid treated 1/2 = 719 grams
2 hours

Run m 33% 9 grams 1.0 ft
Each cell
#129 Acid treated flake 4.1
Green 23.9

396 drops Wt 11.057

10216 382 " Wt 10.954

10217 348 " Wt 10.772
Flake heavy

10218 Dup of 10215

But with Reg tubes —

33% KOH 9 grms 2 18th.

	372 dumped	Cof	10730
10219	373 "	Cof	10828
10220 ~~Broached end~~	371 "	Cof	10883

Flake heavy

10 221

R.A 721 Sample B of 6 lbs 7 oz ground for Rogers and screened by hand 40% fines through 50 mesh and finer These tests are to see if the green is OK. Rogers Regular tubes machine made.

6 rings, 24 green, 4 Chlorinated flakes not acid treated

Flakes 41.2 6 Rings

Green 24.0

Spring 1/64 inch

29% OH

393 dumps wt 11.149

10222 405 dumps wt 11.263

2 | 22412
11206

10223 Duplicate of #10221

21% KOH + 2 gm LiOH

Sprung 1/64 inch.

Checked end 393 dumps wt 10962

10224 398 " wt 11.041

10225. Tubes made in Rogers
Machine #1
24 Green H Eluteriated flakes from Lab.
#721 R.A green Sample #1 - 25 lbs taken
2.96 KOH. 6 rings
Flakes 4.4 average of 4 tubes
Green 2 6. average of 4 tube

Tube Spring 1/64 inch. 390 dumps wt 11.176

10226 390 " wt 11.301
Tubes 1 row perforations less on the seam
rings put on with Rogers ring machine
This group made to see how the
machine ground green works.....

10227 Slup of 10225

21% KOH + 2 gm LiOH

Sprung 1/64 inch

390 dump wt 11.076

10228 390 " wt 11.291

10229 Greenley #3 Flake

Slurp of # 10225 Except # 3 Mi flake
Flake epidoyd, and throw it not purified
2.96 KOH 6 rings
Flake 4.4
Green 24.6

Tubes Spring 1/64 inch 374 dump not 11,340

10230 374 " not 11,281

10231

Same as # 10225 Except
~~20% KOH + 2 gm LiOH~~
21% KOH + 2 gm LiOH

Spring 1/64 inch.

37# damper wt 11.273

10232

37# " wt 11.499

10233 Greenley 2 #3 Flake
Sample #14 of R.Q.#721 Brew
Made in Machine #11
Cannot get nickel slide to take any
21% KOH) less, unless new sliders were used.
Springs

Flake 4.2
Brew 25.0
Springs slightly (2)

327 dumped wt 11101

10234

329 " wt 10,831

10235 Heup. of # 10233

21% KOH. 21 gms Li-OH

Slightly Spunny. (2)

379 dumped wt 10.934

10236 379 " wt 11.015

10237 Tubes made in Battery Bldg
8 Rings made in Machine #7
Greenleis # 8+10 Flake
R.A #7/8 Green. from Sample #6
2.06 KOH.
Flake 4.4
Green 021

Tubes slightly Spongy 425 dumper wt 11.095

425 wt 11.067

10238
Green bulky. Flake heavy.

10239 Ship of # 10237
2-76 LO H. 2 Gyne L-O H.

Tuber Slightly Spring

425 dump/pent 11.1.90

10240 425 " wt 11.1.91

10241 Rogers tubes grew in
Cell that has 2 charges —
728 green 24 flake - poor
Cell gave ——— amperes
24 hour chgs — 8 Rings
21% KOH + 2 gm LiOH
6 tubes 2 fr ea
Slightly Spring.
10242
10243
10244
10245
10246

10247

6 Tubes dup of 10241

But never run

21% KOH + 2 gm LiOH

Lightly fuming.

10248

10249

10250

10251

10252

10253 Slug of #10247
Only made at the Lab.
Flake #24 green #720 from Rogers.
21% [illegible]
Flake 4.2
Green 24.1

	423 dumps	wt 41,511
10254	416 "	wt 11,370
10255	415 "	wt 11,332

Slightly Spring.

$\overline{)3421^{3}}$
1404

10256 Tubes given to me by
Mr Rogers, #732 for Hydrate, 26 #27
in flakes oxidized and run through Hydrogen
Tubes have never been run yet
21% KOH + 2 gm LiOH 8 Ruge
Slightly Sprung.

10257 ———

10 258 ———

10 259 ———

10 260 ———

10 261 ———

10262 Tubes from Rogue.
Flake #27 Green #730
8 Rings

21% KOH + 2 gm LiOH

~~10263 [illegible]~~

10263

10264

10265 Tubes from Rogers
~~10% KOH + 2 gm LiOH~~
Flake # 25 Screw # 730
8 Rings —

21% KOH + 2 gm LiOH

10266 —

10267 —

10268 Tubes from Rogers,
21% KOH + 2 gm LiOH
F. lake #29 Green #730
8 Rings

10269

10270

10271 Tubes from Rogers.
RG. #730 green #30 in flake, oxidized + annealed.

21% KOH + 2 gm LiOH

10272

10273

10274 Tubes from Rogers.
R.A # 730 green, # 32 in flake, oxidized and annealed

21% KOH + 2 gm LiOH

10275

10276

10277 Rogers Tubes, Flake #34 Green #730

21% KOH + 2 gm LiOH

10278

10279

10280 Rogers Tubes
Flake #35 Green #730

21% KOH + 2 gm LiOH

10281

10282

10283 Rogers Tubes,
Flake #36 Screw #720

21% KOH + 2 gm LiOH.

10284

10285

10286 Tubes from Monahan
Oxidized and run through hydrogen in furnace
Flat Flakes # 15A Green # 732
21% KOH + 2 gm LiOH

10287

10288

10289 Long Tube & Rings

21% KOH

Plated 5 hours with 20 mil amps, in Saturated solution of Sulfate of Nickel + ammonia. Plated 1 hour, off 2 – and all night no current.

Dark color seems to be plated.

10290 Klupzioh #10289
Except 21% KOH + 2 gm LiOH

10291 · New Tubes
Plated 10 hours in Nickel Ammonium Sulphate
1 hour on 2 hours off –
Current off nights and Sunday.
Soaked in water then in KOH warm.
21% KOH + 2 gm LiOH

10292 Slup. of Above.
Exc. pt. 21% KOH.

10293 #3. Long Tubes
Has been heated 40 hours at rate of 1 hour on, 2 hours off nights + Sundays

21% KOH + 2 gm LiOH

10294

10295 #5 Long tube
1 St soaked in Ammonium Nickel Sulphate, dried then put in cell Ammonia Nickel Sulphate + plated 5 hours.

21% KOH + 2 gm LiOH

10296 Two tubes

Warm and dip in concentrated for 5 mins. Ammon Nickel Sulphate, dry and warm Ammon Nickel Sulphate again for 10 seconds, dry on asbestos for ½ hour, then dip again 10 seconds and dry ½ hour, then dip again 10 seconds and put in a cell with concentrated Ammon. Sulphate, making the tube cathode, use 30 mill Amp portable for 3 hours, use a nickel anode.

Now put tubes in until current is on

21% KOH + 2 gm LiOH

10297

10298 8 Long Tubes from the Auto.
A 4 cells #35 which made 5000
miles

21% KOH.

10299

10300

10301

10302

10303

10304 Two of the 5000 Endurance tubes put up with 33% KOH 4 gms LiOH Let them stand 24 hours, then send them up for test. To be run ½ rate charge + discharge + solution poured out + 21% [illegible] put in, and run reg.

10305

10306 Dup. of above, but two charges + discharges ½ rate in 33% KOH + 4 gms LiOH., + then remove the solution put in [illegible] + Run Regular

10307

10308 3-Tubes made at Battery
~~Stories~~ Solid Ends

8 Rings

#738 green #18 Air flake.

21% [redacted]

10309

10310

10311 Hlwp. of 10308 Except Hollow Cupped Ends

21% KOH + 2 gm LiOH

wt

10312

10313

10314 10 Tubes from 5000 Endurance
cell #69
#7180 green
11-12-13 + 18 in flakes,
8 Rings

10315 ——

10316 ——

10317 ——

10318 ——

10319 ——

10320 ——

10321 ——

10322 ——

10323 ——

10324 10 Tubes from 5000 Endurance

Cell # 127

#718 green

#19 + 20 ~~[illegible]~~ flakes.

21% KOH + [illegible] LiOH 8 Rings

10325 —

10326 —

10327 —

10328 —

10329 —

10330 —

10331 —

10332 —

10333 —

10334 739 green
Caps in tube 1/8 inch apart for knowledge
New caps.
5 9N 17 9N

21% [illegible]

10335

10336

10337 #739 green
Caps in tube 1/4 inch apart for
Mr Hodge. Cold style caps.
5QN 17QN

21% KOH + 2 gm LiOH

10338

10339

Feb 25, 09.

10340 739 green thru 30 on 190 mesh
Lot #155 Stock #28 Ni flake
These tubes were made with the new
Automatic loading machine, with revolving funnels on the green side.
From Storage Battery Bldg.
21% KOH + 2 gm LiOH Run Regular.
357 dump wt 10.556

10341 " " wt 10.538

10342 Long Tubes from Storage Bath by
The rings which have been put
on by using graphite.

~~21% KOH + 2 mm LiOH~~ After 50 hrs
change to plain 21% KOH.

— dumpe wt —

10343 — " wt —

10344 — " wt —

10345 2 lb lot Bi treated flake
Rd. #853 Air O_2
21% KOH + 2 gm LiOH Run Regular.
From the three cell lot for Holland
#1040 Fe used.

369 dumper wt } 10.876

10346 369 " " } 10.876
Average wt

10347 3 Tubes made at the Battery Works. Tube stock not reperforated.
Flake Lot #11 Rthi(OH)₂ #943.
21% KOH + 2 gm LiOH Run Regular.

10348 ——

10349 ——
Holland has duplicates of these, as a large cell.

10350 3 Tubes made at the Battery Works regular way, regular tubes. Flakes Lot #11 RA #943 $Ni(OH)_2$
21% KOH + 2 gm LiOH Run Regular

10351

10352

Holland has duplicate of these, as a large cell.

Oct 5, 09

10353 6 Tubes from Battery Works
Li Flake Lot #11 Nitrhydrate #9449 RA.
21% KOH + 2 gm LiOH Run Regular Cold
Three days

10354

10355

10356

10357

10358

10359 6 Tubes from Battery Works Oct 6, 09.
Ni flake Lot #11 Ni Hydrate #950 Rd.
21% KOH + 2 gm LiOH Rlw Regular, held 3 days.

10360

10361

10362

10363

10364

Oct. 7, 09.

10365 6 Tubes from Battery Works
Ni flake Lot #12. $Ni(OH)_2$ RA #952

21% KOH + 2 gm LiOH Run Regular 3 days
Cold

10366

10367

10368

10369

10370

Oct. 8, 09

10371 6 Tubes from Battery Works.
Ni flake Lot #12 Rd. $Ni(OH)_2$ 9/5/6
21% KOH + 2 gm LiOH Run Regular 3 days cold

10372

10373

10374

10375

10376

Oct. 9, 09

10377 6 Tubes from Battery Works
Ni flake lot #12 Ra Ni OH #953
21% KOH + [illegible] LiOH Run hourly 3 days 44

10378

10379

10380

10381

10382

Reid 7 Tubes

Oct. 11, 09.

Put up 6 Tubes from Battery Works
10383 in flasks lot #12 RA #953 Ni(OH)2
21% KOH + 2 gm LiOH Run Regular 3 days old.

10384

10385

10386

10387

10388

Rings was very loose. Sent back for tubes with tight rings.

Oct. 12, 09.

10389 6 Tubes from Battery Works
Ni flake Lot #12 Ref. #955 Ni(OH)2
21% KOH + 2 gm LiOH Run Reg. 3 days old

10390

10391

10392

10393

10394

Oct. 13, 09.

10395 6 Tubes from Battery Starter
Ni flake Lot # 12 RQ# 959 $Ni(OH)_2$
21% KOH + 2 gm LiOH Run Reg. 3 days cold

10396

10397

10398

10399

10400

Oct. 14, 09.

10401. 6 Tubes from Battery Hanles
Ti flake Lot #12. Rgl # 959 Zn & H_2
21% KOH + 2 gm LiOH Run Regular, 3 days cold

10402

10403

10404

10405

10406

Oct. 15, 09.

~~10407~~ None Received

~~Shut down on account bad Ni O H/2~~

Oct. 16, 09.

None Received

Running slow Shut down, bad Ni O H/2.

~~Stakes in fingers when feeding~~

Oct. 18, 09.

10407 6 Tubes from Battery Horlen

Ni flake Lot-12. Rd. #6369 Ni O H/2

Run Reg. 3 days old

10408

10409

10410

10411

10412

Oct. 19, 09.

1043. 6 Tubes from Battery Works.
In flake Lot #13 RA #1073 In 6 Hr
.13% Raw Regular 3. days old.

1044 ——

1045 ——

1046 ——

1047 ——

1048 ——

Oct. 20, 09. None Received

10419 Oct. 21, 09. 6 tubes from Battery Works.
Mi flake Lot #13 RA #974 Mi φ Hz
Run Regular 3 days work

10420

10421

10422

10423

10424

Oct. 22, 09.

10425 6 Tubes from Battery Works.
Ni flake Lot 13 Kl. #975 Ni hydrate
Run Reg. 3 days cold.

10426

10427

10428

10429

10430

Oct. 23, 09.

10431 6 Tubes from Battery Works
Lot #13 Ni flake Rd #955 Ni O H/2
21% KOH + 2 gm LiOH Rundleg 3. days old

10432

10433

10434

10435

10436

Oct. 25, 09.

10437 6 Tubes from Battery Works
Lot # 13 Ni flaked. RQ. # 680 Li(OH)2
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

10438

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10440

10441

10442

Oct. 26, 09.

10443 6 Tubes from Battery Works.
In flake Lot 14 Rel. # 986 in 6 H/2
81% KOH + 2 gm LiOH Run Regular 3. days cold

10444 ——

10445 ——

10446 ——

10447 ——

10448 ——

Oct. 27, 09.

10449 6 Tubes from Battery Works
Ni flakes Lot 14- Rd. #979 Ni OH
Run Regular 3 days old

10450

10451

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10454

Oct. 28, 09

10455 6 Tubes from Battery Hopler
Li flake Lot 14. Rd #984 Li OH/L
21% KOH + 2 gm LiOH Run Reg 3 days cold.

10456

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10459

10460

Oct 28/09

10461 6 Tubes from Battery works
Special tubes inflated at 14-
Double tamper?
Rd# 990 MOHs
Run Reg. 3 days cold.

10462

10463

10464

10465

10466

Oct. 29, 09.

10467 6 Tubes from Battery Hopper
in flakes Lot 14- Rd. #987 Ni $(OH)_2$
21% KOH + 2 gm LiOH Runs Regular 3 days old.

10468 _____

10469 _____

10470 _____

10471 _____

10472 _____

Oct. 30, 09

10473 6 Tubes from Battery Works
Ni flake Lot 14 Eq. #977 Ni(OH)2
21% KOH + 2 cm LiOH Run Regular 3 days old.

10474

10475

10476

10477

10478

Oct. 30, 09

10479 Special 5 tubes from Battery Works
~~Lot~~ # 2 Special Ra #977 NiOH/2
~~Lot~~ 14 Ni flake
21% KOH + 2 gm LiOH Run Regular 3 days old
Rings put on the present way.

10480 ——

10481 ——

10482 ——

10483 ——

Oct. 30, 09.
5 Special tubes from Battery Works.
Lot 14 Ni flake Ra. #977 NiOH/2
Lot #1 Special, tight rings
21% KOH + 2 gm LiOH Run Regular 3 days old

10484 ——

10485 ——

10486 ——

10487 ——

10488 ——

10489 6 Tubes duplicate of the cell with flat flake given to Holland.
Made at Storage Battery Bldg.
Circular hopper & vane stirrer 1 revolution to the dump of flake. D Machine
Ni flake 230 B 4 X 1½ min. Ni. 20 sec. Cu.
Rd = 987 Ni(OH)2
Fl flake 4.2 Green 27.1
21% KOH + 2 gm LiOH Run Regular 3 days cell.
Right hand spiral, old tubing machine.

		319	dump	wt	9.835
10490	"	318	"	wt	9.910
10491	"	317	"	wt	9.790
10492	"	314	"	wt	9.470
10493	"	313	"	wt	9.035
10494	"	319	"	wt	9.070

Dump green, then flake & dump once.

10495 Duplicate of 10489 Except
Left hand spiral, Cold tubing machine,
21% KOH + 2 gm LiOH Runs Regular 3 days old

	2,	296	dumped wet	8.450
10496	3,	322	" wet	9.150
10497	4,	329	" wet	9.665
10498	5,	332	" wet	9.345
10499	2	282	" wet	8.270
10500.	8,	329	" wet	9.605

10501 Duplicate of #10489 Except
Right hand spindle, German tubing machine
21% KOH + 2 gm LiOH Run Regular 3 days old

Average ~~for~~ dumpsof

10502

the 8 tubes 321

10503

no weights taken

10504

10505

10506

10507 Duplicate of 10409 Except
Left hand opened. German taking machine
21% KOH + 2 gm LiOH Run Regular 3 days cell

10508 Average of 8 Tubes taken

10509 dumped 329

10510 No weights taken.

10511

10512

Nov. 1, 09

10513 6 Tubes from Battery Works
Ni flake Lot 14 Rd # 947 Ni(OH)2
21% KOH + 2 gm LiOH Run Reg 3 days cold.

10514 _____

10515 _____

10516 _____

1057 _____

10518 _____

Nov. 2, 09.

10519. 6 Tubes from Battery Works
Tri flake Lot 14 - Rd. #981 Tri 6 Hp
[illegible] Run Regular 3. days sold.

10520

10521

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10524

Nov. 3, 09

10525 6 Tubes from Battery works
Ni flake Lot 15. Ra #9 & $Ni(OH)_2$
21% KOH + 2 gm LiOH Run Regular 3 days cold

10526

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10530

Nov 3, 09

10531 6 Tubes from Battery Works
Ni flake Lot # 15 - Rd. #9 Ni(OH)2
21% KOH + 2 gm LiOH Run Regular 3 days old
Spec. Lot 4 Regular Lamp.

10532
10533
10534
10535
10536

Nov 3, 09.
6 Tubes from Battery Works
Ni flake Lot 15 - Rd #9 Ni(OH)2
21% KOH + 2 gm LiOH Run Regular 3 days old.
Spec. Lot 3. Heavy Lamp.

10537
10538
10539
10540
10541
10542

10543 Rd 854 Ni(OH)2
Lot 159 - Ni flake
Flake 43 Green 23.9 #2 Machine
Slump green, then flake + tamp once.
21% KOH + 2 gm LiOH Run Reg. 3 days cold

8593 green 378 dumps wt 10.030

10544 372 " wt 10.250 10140
Plunger would not rebound till after 30 dumps
was in tube. My plunger collar is 3/1000 larger
than the Stonege/Battery machines.

10545 Slump, of above except loose weight
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

367 dumps wt 9.924

10546 369 " wt 10.077

2 | 20000 / 10000

8475 green

10547 R.A. #254 $Ni(OH)_2$

Lot 15 in flakes. This is their latest flakes.

Flakes 5.6 Green 23.9 #2 Machine

Slump green, then flakes + temp sources.

[illegible] Run Reg. 3. days sold.

358 dumps wt 10,351

10548 345 " wt 10,001

9.241 green 10175

10549 Slump. of above except loose weight.

21% KOH + 2 gm LiOH Run Reg. 3. days sold.

332 dumps wt 9.522

10550 328 " wt 9442

7.679 green 2 | 18964 / 9482

Nov. 4, 09.

10551 6 Tubes from Battery Parker
Millake Lot 15 - R.A. = 9h 52m 6H
87% HOT + [illegible] HOT Run Regular 3 days cold.

10552

10553

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Nov. 5, 09

10557. 6 Tubes from Battery Wanda
Ni flake Lot 15- Pd #964 $Ni(OH)_2$
21% KOH + 2 gm LiOH Run Regular 3 days old.

10558

10559

10560

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10562

10563 Rd #054 Ni(OH)2 {Second Lot of tubes}
Ni flake Lot 15.
Flake 5.6 Green 23.9 #2 Machine
21% KOH + 2 gm LiOH Run Reg. 3 depressed.
Dump green then flake & dump once.
Reg. dead wt.

359 dumps wt 10.438

10564 357 " wt 10.407

2 | 20.845
10.422

10565 Dump of above except loose tamps wt.

349 dumps wt 10.286

10566 353 " wt 10.431

2 | 20.717
10.358

10567 Rd #854 Ni 6 Hr
Ni flake Lot 159
Flake 4.3 Green 23.9 #2 Machine
21% KOH + 2 gm LiOH Run Reg. 3 days cold.
Dump green, then flake + tamp once.
Loose tamp wt.

360 dump wt 10,145

10568 372 " wt 10,140

10569 Dump of above except 3½ lb head wt.

369 dump wt 10,087

10570 369 " wt 10,155

242

10571 Flake B-17.X
R.O. #983 $LiOH_2$
New hopper + stirrer used to try the flakes.
Flake 4.2 Green 28.1 - D Machine
21% KOH + 2 gm LiOH Run Regular 3 days old

	3	324 drum per wt		10.105
10572	3	313 "	wt	9.805
10573	4	326 "	wt	10.025
10574	5	330 "	wt	10.000
10575	6	299 "	wt	9.545
10576	8	317 "	wt	9.840

Feed the flakes as good as the other machines.

Nov. 6, 09.

10577 6 Tubes from Battery Works
Ni flake Lot 15. Rd. #9 84 $Ni(OH)_2$
[illegible] Run Regular 3 days old

10578 _____

10579 _____

10580 _____

10581 _____

10582 _____

Nov. 8, 09

10583 6 Tubes from Battery Works
Ni flake Lot 12. Rd. #1990 Ni(OH)2
21% KOH + 2 gm LiOH Run Reg. 3 days cold

10584 _____

10585 _____

10586 _____

10587 _____

10588 _____

Nov. 8, 09.

10589 6 Tubes from Battery Works.
Ni flake Lot 15. Ra. #99 % NiO H2
21% KOH + 2 gm LiOH Run Regular. 3. days cold

10590

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Nov. 8, 09

10595 6 Tubes from Battery Works
lot 15 Ni flakes, RG, # 908 Ni(OH)2
21% KOH + 3 gm LiOH Run Regular 3 days cold

10596 _____

10597 _____

10598 _____

10599 _____

10600 _____

Nov 9, 09.

10601 6 Tubes from Battery Maker
Sat 15-Ni flake. Rd. # 9189 Ni(OH)2
[illegible] Runs Regular 3. days cold.

10602

10603

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10605

10606

10607 Rd. 85% Ni(OH)2 Made for Mr Hodge.
Lot 159 Ni flake
Flake 4.3 Shear 26.6 #2 Machine
Dump green, thin flake + tamp once, dead wt.
21% KOH + 2 gm LiOH Run Regular 3. days cold.

326 dumps wt 9.908

10608 331 " wt 9.963

10609 Dump of Above except, Loose wt.
21% KOH + 2 gm LiOH Run Regular 3. days cold.

326 dumps wt 9.935

10610 321 " wt 9.741

10611 Rlt-99.9 $Li(OH)_2$ Made for Mr Hodge.
Lot 16-in flake
Flake 4.3 Green 26.5 #1 Machine
Hump green, then flake + tamponee.
Head weight

21% KOH + 2 gm LiOH Run Regular 3, days old

341 dumps wt 9.943

10612 334 wt 9.835
This green is bulkier than Rlt-85% $LiOH/h$

10613 Hump. of above Except
Loose weight

21% KOH + 2 gm LiOH Run Regular 3, days old

335 dumps wt 9.816

10614 340 " wt 9.921

Nov. 10, 09.

10615 6 Tubes from Battery Works
Ni flake Lot 16. Rd. #990 $Ni(OH)_2$
Old style double tanks.
21% KOH + 2 gm LiOH Run Regular 3. days cold.

10616
10617
10618
10619
10620

Nov. 10, 09. from Battery Works
10621. Ni flake Lot 16 - Rd. #990 $Ni(OH)_2$
New Style
21% KOH + 2 gm LiOH Run Regular 3. days cold.

10622
10623
10624
10625
10626

Nov. 10, 09

10627 6 Tubes from Battery Worker
Ni flake Lot 16. Rd #990 $Ni(OH)_2$
Old Style
21% KOH + 2 gm LiOH Run Regular 3. days cold.

10628
10629
10630
10631
10632

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6 Tubes from Battery Worker
10633 Nov. 10, 09
Ni flake Lot 16. Rd #990 $Ni(OH)_2$
New Style heavy
21% KOH + 2 gm LiOH Run Regular 3. days cold.

10634
10635
10636
10637
10638

Nov. 11, 09.

10639 6 Tubes from Battery Works.
Ni flake Lot 16. Rd. #991 Ni $(OH)_2$
Old Style Mach. J.
21% KOH + 2 gm LiOH Run Regular 3. days cold.

10640
10641
10642-X This one had some ~~out of~~ moisture at the seam
10643 Showed ~~to the Hodge~~.
10644

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6 Tubes from Battery Works
Nov. 11, 09.
10645 New Style Mach. O I
Ni flake Lot 16 Rd #991 Ni $(OH)_2$
21% KOH + 2 gm LiOH Run Regular 3. days cold.

10646
10647
10648
10649
10650

Nov. 11, 09.

10651 6 Tubes from Battery Works
Ni flake Lot 16. Rd. #991 Ni(OH)2
Old style machine B. One tamp to each
dump of flake + hydrate
21% KOH + 2 gm LiOH Run Regular 3 days cold.

10652
10653
10654
10655
10656

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6 Tubes from Battery Works
Nov. 11, 09.
10657
Ni flake Lot 16 - Rd #991 Ni(OH)2
New Style Mach. St. ½ lb added to each plunger
21% KØH + 2 gm LiOH Run Regular 3 days cold.

10658
10659
10660
10661
10662

Nov. 12, 09.

10663 6 Tubes from Battery Worker

Lot 16 Ni flakes. Rd. 992 $Ni(OH)_2$

New Style machine B.

21% KOH + 2 gm LiOH Run Regular 3. days cold

10664

10665

10666

10667

10668 ~~Slightly low about 200 milligms.~~

10669 Nov. 12, 09. 6 Tubes from Battery Worker

Ni flakes Lot #16 Rd #992 $Ni(OH)_2$

Mach. B. One tamp to each dump of flakes + hydrate,

21% KOH + 2 gm LiOH Run Regular 3. days cold

10670

10671

10672

10673

10674

Nov. 12, 09.

10675 6 Tubes from Battery Works
Ni flake Lot 16. Ra. #992 Ni(OH)2
½ lb added to each plunger, New-Style.
21% KOH + 2 gm LiOH Run Regular 3 days old

10676
10677
10678
10679
10680

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6 Tubes from Battery Works
10681 Nov. 12, 09.
Ni flake Lot 16. Ra. #992 Ni(OH)2
Old style mach. I.
21% KOH + 2 gm LiOH Run Regular, 3 days old

10682
10683
10684 X
10685 X
10686 X

All these tubes are slightly low, the three last ones are lowest by ½.

Nov. 13, 09.

10687 6 Tubes from Battery Works
Ni flake Lot #16. Reg. #993 $Ni(OH)_2$
Old style machine. B. One tamp to
each dump of flake + hydrate.
21% KOH + 2 gm LiOH Run Reg 3. days old

	wt	10.715
10688	"	10.368
10689	"	10.745
10690	"	10.528
10691	"	10.848
10692	"	10.598

Lot #16. Reg. #993 6 Tubes from Battery Works
Nov. 13, 09.
10693 New Style machine. H. ½ lb added
to each plunger.
21% KOH + 2 gm LiOH Run Reg 3. days old

	wt	10.331
10694	wt	10.439
10695	wt	10.436
10696	"	10.671
10697	"	10.511
10698	"	10.438

Nov. 13, 09.

10699 6 Tubes from Battery Works
Ni flake Lot # 16. RQ. #993 Ni(OH)2
Old Style mach. I.
21% KOH + 2 gm LiOH Run Regular 3. days cold

	wt	9. 985
10700	"	10. 364
10701	"	10. 083
10702	"	10. 165
10703	"	10. 244
10704	"	10. 250

Nov. 13, 09.

10705. 6 Tubes from Battery Works
Ni flake Lot # 16. RQ. #993 Ni(OH)2
New Style mach. C I
21% KOH + 2 gm LiOH Run Regr. 3. days cold.

	wt	10. 248
10706	wt	10. 205
10707	"	10. 738
10708	"	10. 600
10709	"	10. 285
10710	"	10. 051

Nov. 15, 09.

10711 6 Tubes from Battery Works
Rd. #994 Ni(OH)2 Lot 16 Ni flake
Old style machine I.
21% KOH + 2 gm LiOH Run Reg. 3. days cold.

	———	wt	10.185
10712	———	wt	10.192
10713	———	"	10.074
10714	———	"	10.180
10715	———	"	10.146
10716	———	"	10.133

Nov. 15, 09,
10717 6 Tubes from Battery Works
Ni flake Lot 16 Rd. #994 Ni(OH)2
New Sylamach. C I
21% KOH + 2 gm LiOH Run Reg. 3. days cold.

	———	wt	1.8584
10718	———	"	10.287
10719	———	"	10.495
10720	———	"	10.784
10721	———	"	10.557
10722	———	"	10.531

Nov. 15, 09.

10723 6 Tubes from Battery Starke
Ni flake Lot 16. Rd. 994 $Ni(OH)_2$
½ lb added to each plunger, New Style mach. W.
21% KOH + 2 gm LiOH Run Reg. 3 days cold

		wt	10. 219
10724		"	10. 235
10725		"	9. 946
10726		"	10. 065
10727		"	10. 030
10728		"	9. 893

Nov. 15, 09.

10729. 6 Tubes from Battery Starke
Ni flake Lot 16. Rd. 994 $Ni(OH)_2$
Old style mach B. One tamp to each dump of flake hydrate.
21% KOH + 2 gm LiOH Run Regular 3 days cold.

		wt	10. 695
10730		"	11. 016
10731		"	10. 186
10732		"	10. 843
10733		"	10. 650
10734		"	10. 490

Nov. 16, 09.

10735 6 Tubes from Battery Works
Lot 16 Ni flake Rll 995 Ni OH2
Reg. Tubes
21% KOH + 2 gm LiOH Run Reg. 3 days to Cd

	———	wt	10.565
10736	———	"	10.657
10737	———	"	10.708
10738	———	"	10.675
10739	———	"	10.502
10740	———	"	10.523

Nov. 16, 09.

10741 6 Tubes from Battery Works
Lot 16 Ni flake. Rll# 995 Ni OH2
New Style Machine. H. ½ lb added to each plunger.
21% KOH + 2 gm LiOH. Run Reg. 3 days to Cd.

	———	wt	10.506
10742	———	"	10.230
10743	———	"	10.690
10744	———	"	10.279
10745	———	"	10.790
10746	———	"	11.075

Nov. 16, 09.

10747 6 Tubes from Battery Works
Ni flake Lot 16. Rd. #995 $Ni(OH)_2$
Old style mash. I.
21% KOH Run Regulars. dap. fold.

	wt	10.744
10748	"	10.662
10749	"	10.578
10750	"	10.880
10751	"	10.545
10752	"	10.697

Nov. 16, 09.

10753 6 Tubes from Battery Works
Ni flake Lot 16. Rd. #995 $Ni(OH)_2$
New Style mash. C.1.
21% KOH + 2. gm LiOH Run Reg. 3. dap. fold

	wt	10.880
10754	"	10.788
10755	"	10.762
10756	"	11.122
10757	"	10.853
10758	"	10.772

Nov. 16, 09

10759 6 Tubes from Battery Works
Ni flake Lot 16. Ra. #998 Ni(OH)2
Old style mach. B. One tank to each dump of flake
v hydrate. 21% KOH + 2 gm LiOH Run Reg. 3. days old.

		wt	11.470
10760		"	10.929
10761		"	11.130
10762		"	11.230
10763		"	11.220
10764		"	10.722

Nov. 17, 09.
10765 6 Tubes from Battery Works
Ni flake Lot 17 - Ra. #997 Ni(OH)2
Regular Tubes
21% KOH + 2 gm LiOH Run Reg. 3. days old.

		wt	10.379
10766		"	9.986
10767		"	10.266
10768		"	10.264
10769		"	10.198
10770		"	10.000

Nov. 17, 09.

10771 6 Tubes from Battery Works
Ni flake Lot 17 – Rd. #997 Ni(OH)2
new style mach. Ht. ½ lb added to each plunger

21% KOH + 2 gm LiOH Run Reg. 3. days old

	wt	10.230
10772	"	10.526
10773	"	10.575
10774	"	10.587
10775	"	10.566
10776	"	10.487

Nov. 17, 09.

10777 6 Tubes from Battery Works
Ni flake Lot 16 Rd. #997 Ni(OH)2
Old style Mach. J.

21% KOH + 2 gm LiOH Run Reg. 3. days old.

	wt	9.972
10778	"	9.517
10779	"	9.600
10780	"	10.026
10781	"	9.977
10782	"	9.904

Nov. 17, 09.

10783 6 Tubes from Battery Works
Lot 17 Ni flake Rd. 997 $Ni(OH)_2$
New style mach. B
21% KOH + 2 gm LiOH Run Reg. 3 days cold

		wt	10.602
10784		"	10.293
10785		"	10.390
10786		"	10.440
10787		"	10.442
10788		"	10.372

Nov. 17, 09.

10789 6 Tubes from ~~Battery~~ Works
Lot 17, Ni flake Rd. 997 $Ni(OH)_2$
Old style mach. B. Run temp to each dump of Nickel hydrate
21% KOH + 2 gm LiOH Run Reg. 3 days cold

	Scratched	wt	10.625
10790	Scratched	"	10.405
10791		"	10.264
10792		"	10.642
10793		"	10.127
10794		"	10.296

Nov. 18, 09.

10795 6 Tubes from Battery Works
Lot 17 Ni flake. Rd. #998.
Old style regular stock,
21% KOH + 2 gm LiOH Run Reg. 3 days old.

	———	wt	10,555
10796	———	"	10,460
10797	———	"	10,525
10798	———	"	10,225
10799	———	"	10,135
10800	———	"	10,535

Nov. 18, 09.

10801 6 Tubes from Battery Works
Ni flake Lot 17. Rd. #998 Ni(OH)2
Old style mech. B. One tamp to each dump of flake hydrate
21% KOH + 2 gm LiOH Run Reg. 3. days old.

	———	wt	10,750
10802	———	"	10,895
10803	———	"	10,785
10804	———	"	10,825
10805	———	"	10,735
10806	———	"	10,820

Nov. 18, 09.

10807 6 Tubes from Battery Stores
Ni flake Lot 17. Rd #998 $LiOH_2$
New Style mach. No: Heavy Tanks
21% KOH + 2 gm LiOH Runs Reg. 3. days cold.

	———	wt	10,680
10808	———	"	10,765
10809	———	"	10,405
10810	———	"	10,570
10811	———	"	10,490
10812	———	"	10,530

Nov. 18, 09.

10813 6 Tubes from Battery Stores
Ni flake Lot 17. Rd. #998 $LiOH_2$
Old style mach. J.
21% KOH + 2 gm LiOH Runs Reg. 3. days cold.

	———	wt	10,395
10814	———	"	10,295
10815	———	"	10,275
10816	———	"	10,305
10817	———	"	9,985
10818	———	"	10,210

Nov. 18, 09.

10819 6 Tubes from Storage Battery Works.
Ni flakes Lot 17. Rd. #998 $NiO H_2$
New Style mach. C I.
21% KOH + 2 gm LiOH Run Regular

	wt	10.535
10820	"	10.455
10821	"	10.490
10822	"	10.675
10823	"	10.315
10824	"	10.515

Nov. 19, 09.

10825 6 Tubes from Battery Works
Ni flakes Lot 17. Rd. #999
Old style mach. J.
21% KOH + 2 gm LiOH Run Reg. 3. days old.

	wt	10.540
10826	"	10.725
10827	"	10.430
10828	"	10.360
10829	"	10.465
10830	"	10.630

Nov. 19, 09.

10831 6 Tubes from Battery Worker
Ni flake Lot 17. Rd. #999 $Ni(OH)_2$
Old style mach. B Over tamp, each dump of flake + hydrate
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

		wt	10.790
		"	10.975
10832		"	11.110
10833		"	11.135
10834		"	10.970
10835		"	11.090
10836		"	

Nov. 19, 09.

10837 6 Tubes from Battery Worker
Ni flake Lot 17. Rd. #999 $Ni(OH)_2$
Heavy tamp, Mach. H.
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

		wt	11.030
10838		"	10.430
10839		"	10.885
10840		"	11.120
10841		"	10.810
10842		"	10.870

Nov. 19, 09.

10843 6 Tubes from Battery Works.
Ni flake Lot 17. Rd. #999 Ni(OH)2
New Style Mach. C.
21% KOH + 2 gm LiOH Run Reg. 3. days old

	———	wt	10,620
10844	———	"	10,865
10845	———	"	10,590
10846	———	"	10,860
10847	———	"	10,525
10848	———	"	10,795

Nov. 19, 09.

10849 6 Tubes from Battery Works
Ni flake Lot 17. Rd. #999. Ni(OH)2
General Production.
21% KOH + 2 gm LiOH Run Reg. 3. days old.

	———	wt	10,680
10850	———	"	11,035
10851	———	"	10,635
10852	———	"	10,430
10853	———	"	10,550
10854	———	"	10,625

Nov. 20, 09.

10855 6 Tubes from Battery Works
Lot 17 – Ni flake. Rd. # 1006 Ni(OH)2
B. mach. Low temp. for flake + hydrate
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

		wt	10,805
10856		"	11,210
10857		"	10,995
10858		"	10,990
10859		"	10,570
10860		"	10,515

Nov. 20, 09.

10861 6 Tubes from Battery Works
Ni flake Lot 17. Rd. # 1000 Ni(OH)2
Heavy temp. W. = mach.
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

		wt	10,575
10862		"	10,905
10863		"	10,935
10864		"	10,795
10865		"	10,555
10866		"	10,735

Nov. 20, 09.

10867 6 Tubes from Battery Works
Ni flake Lot 17. Rq. # 1000 $Ni(OH)_2$
New Style C.1
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

	wt	10,640
10868	"	10,400
10869	"	10,475
10870	"	10,655
10871	"	10,600
10872	"	10,225

Nov. 20, 09.

10873 6 Tubes from Battery Works
Ni flake Lot 17. Rq. # 1000 $Ni(OH)_2$
General Production.
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

	wt	10,275
10874	"	10,400
10875	"	10,510
10876	"	10,440
10877	"	10,660
10878	"	10,480

Nov. 20, 09.

10879 6 Tubes from Battery Works
Ni flake Lot 17. Rd #1000 Ni(OH)2
Old style } mach.
21% KOH + 2 gm LiOH Run Reg. 3 days old

		wt	10.555
10880		"	10.055
10881		"	10.315
10882		"	10.440
10883		"	10.150
10884		"	10.340

Nov. 22, 09.

10885- 6 Tubes from Battery Works
Ni flake Lot 17. Rd # 1002 Ni(OH)2
Heavy tamp Pk = mach.
21% KOH + 2 gm LiOH Run Reg. 3 days old.

		wt	10.700
10886		"	10.930
10887	Bad Weight	"	9.070
10888		"	10.750
10889		"	10.925
10890		"	11.135

Nov. 22, 09.

10891 6 Tubes from Battery Works
Ni flake Lot 17, Rd # 10062 Ni(OH)2
New Style Cs Mash.
21% KOH + 2 gm LiOH Run Reg. 3, days cold.

	———	wt	10.420
10892	———	"	10.630
10893	———	"	10.805
10894	———	"	10.440
10895	———	"	10.665
10896	———	"	10.570

Nov. 22, 09,

10897 6 Tubes from Battery Works
Ni flake Lot 17, Rd # 10062 Ni(OH)2
(One temp to each dump, flake + hydrate Machine 13
21% KOH + 2 gm LiOH Run Reg. 3. days cold,

	———	wt	10.850
10898	———	"	10.870
10899	———	"	10.550
10900	———	"	11.030
10901	———	"	10.285
10902	———	"	10.795

Nov. 22, 09.

10903 6 Tubes from Battery Works
Ni flake Lot 17. Ra. #1002 $Ni(OH)_2$
Old style mach. J.
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

	wt	10.455
10904	"	10.525
10905	"	10.375
10906	"	10.530
10907	"	10.645
10908	"	10.570

Nov. 22, 09.

10909 6 Tubes from Battery Works
Ni flake Lot 17. Ra. #1002 $Ni(OH)_2$
General Production
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

	wt	10.790
10910	"	10.870
10911	"	10.415
10912	"	10.990
10913	"	10.630
10914	"	10.685

From this group on all long tubes should be soaked 24 hours before putting on test unless prepared otherwise. #10915 Nov. 23, 09.

Nov. 23, 09.

10915 6 Tubes from Battery Works.
Ni flake Lot 17. Rd. # 1005 Ni(OH)2
General Production.
21% KOH + 2 gm LiOH Run Reg. 3 days old.

		wt	10,400
10916		"	10,890
10917		"	10,420
10918		"	10,640
10919		"	10,855
10920		"	10,660

Nov. 23, 09.

10921. 6 Tubes from Battery Works
Ni flake Special 1052. Rd. # 1005 Ni(OH)2
New Stirrer on D Machine
21% KOH + 2 gm LiOH Run Reg. 3 days old.

	~~Soaring~~	wt	10,390
10922		"	10,330
10923		"	9,900
10924		"	10,300
10925		"	10,585
10926		"	9,840

Nov. 24, 09

10927 6 Tubes from Battery Works
Ni flakes Lot 18. Rd. #1006 Ni(OH)2
General Production.
21% KOH + 2 gm. LiOH Run Reg. 3 days cold.

		wt	10.515
10928		"	10.380
10929		"	10.715
10930		"	10.305
10931		"	10.440
10932		"	10.620

Nov. 26, 09.
10933 6 Long tubes from Battery Works
Lot 18 Ni flakes, Rd. # 1007 Ni(OH)2
General Production.
21% KOH + 2 gm. LiOH Run Reg. 3 days cold.

		wt	10.545
10934		"	10.670
10935		"	10.595
10936		"	10.620
10937		"	10.670
10938		"	10.520

Nov. 27, 09.

10939 6 Tubes from Battery Works
Ni flake Lot 18 RA # 1008 $Ni(OH)_2$

Run Reg. 3 days old.

	wt	10.450
10940	"	10.355
10941	"	10.525
10942	"	10.810
10943	"	10.690
10944	"	10.395

Nov. 29, 09.

10945 6 Tubes from Battery Works
Ni flake Lot 18. RA # 1009 $Ni(OH)_2$

General Production

Run Reg. 3 days old.

	wt	10.870
10946	"	10.620
10947	"	10.425
10948	"	10.455
10949	"	10.210
10950	"	10.545

Nov. 30, 09.

10951 Lot 18 6 Tubes from Battery Harbor
Mi flake. Rd. #1011 Mi O H/L
General Production.

% [illegible] Run Reg. 3. days old.

	wt	10.270
10952	"	10.460
10953	"	10.465
10954	"	10.365
10955	"	10.010
10956	"	10.320

Dec. 1, 09. 6 From Battery Harbor
10957 Lot 19 Mi flake. Rd# 1013 Mi O H/L
General Production

% [illegible] Run Reg. 3. days old.

	wt	10.720
10958	"	10.670
10959	"	10.740
10960	"	10.285
10961	"	10.660
10962	"	10.320

Dec. 2, 09.

10963 6 Tubes from Battery Works
in flake Lot 19. Ref # 1613 LiOH
General Production
21% KOH [illegible] Run Reg. 3 days cold.

	—	wt	10.870
10964	—	"	10.430
10965	—	"	10.470
10966	—	"	10.555
10967	—	"	10.555
10968	—	"	10.750

Dec. 3, 09.

10969 in flake Lot 19. Ref. # 1615 LiOH
General Production
21% KOH + 2 gm LiOH Run Reg. 2 days cold.

	—	wt	10.450
10970	—	"	10.320
10971	—	"	10.160
10972	—	"	10.205
10973	—	"	10.485
10974	—	"	10.285

Dec. 4, 09.

10975 6 Tubes from Battery Works
Niflake Lot 19. RA. #1016 Ni(OH)2
General Production.

Run Reg. 3 days old.

	wt	10.185
10976	"	10.380
10977	"	10.360
10978	"	10.310
10979	"	10.380
10980	"	10.435

Dec. 6, 09.

10981 6 Tubes from Battery Works
Niflake ~~Lot~~ 19 RA. # 1018 Ni(OH)2

Run Reg. 3 days old.

	wt	10.705
10982	wt	10.820
10983	"	10.625
10984	"	10.700
10985	"	10.640
10986	"	10.680

Dec 7, 09.

log 87 16 Tubes from Battery Works
Lot # 19 Ni flake. Rd. # 1019 Ni (OH)2
33% KOH + [illegible] Run Reg. 3 days sold.

General Production.

		wt	10,442
10988		"	10.557
10989		"	10,332
10990		"	10,527
10991	Bad tube	"	9,607
10992		"	10,587

Dec. 8, 09

10993 6 Tubes from Battery Works.

General Production

21% KOH + 2 gm LiOH Run Reg. 3 days sold

Ni flake Lot 19. Rd # 1020 Ni (OH)2

		wt	10,437
10994		"	10,327
10995		"	10,272
10996		"	10,007
10997		"	10,127
10998		"	10,222

Dec 9, 09.

10999 6 Tubes from Battery Works
Ni flake Lot 19. Rd. #1013 $Ni(OH)_2$
General Production
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

	Net	10.187
11000	"	10.162
11001	"	9.792
11002	"	10.362
11003	"	10.227
11004	"	10.107

Dec 9, 09.

11005 6 Tubes from Battery Works
Ni flake Lot 19. Rd. #1012 $Ni(OH)_2$
General Production.
21% KOH + 2 gm LiOH Run Reg. 3, days cold.

	Net	10.027
11006	"	10.202
11007	"	10.287
11008	"	9.747
11009	"	9.502
11010	"	10.452

Dec 9, 09

11011 6 Tubes from Battery Works
Ni flake Lot 20. Rd. #1023 Ni(OH)2
General Production
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

	wt	9.987
11012	"	9.967
11013	"	10.022
11014	"	10.182
11015	"	10.152
11016	"	10.082

Dec 9, 09.
11017 one tube from Battery Works
Ni flake Lot 20. Rd. # 1026 Ni(OH)2
21% KOH + 2 gm LiOH Run Reg. 3 days cold
wt 10.492

Dec. 10, 09
11017 6 Tubes from Battery Works
Ni flake Lot 20 Rd. #1026 Ni(OH)2
General Production.
21% KOH + 2 gm LiOH Run Reg. 3 days cold.

	wt	10.197
11018	"	10.452
11019	"	10.317
11020	"	9.887 Bad wt.
11021	"	10.092
11022	"	10.022

Dec. 11, 09.

11023 6 Tubes from Battery Works

Lot 20 Ni flake. RQ. # 1027 $Ni(OH)_2$

Regular Production.

21% KOH + 2 gm LiOH Run Rq. 3. days old.

—— wt 10.097

11024 —— " 10.167

11025 —— " 10.062

11026 —— " 10.097

11027 —— " 10.252

11028 —— " 10.302

This group rings were peeling.

Dec. 13, 09.

11029 6 Tubes from Battery Works

Lot 20 Ni flake. RQ. #1028 $Ni(OH)_2$

General Production

21% KOH + 2 gm LiOH Run Rq. 3 days old.

—— wt 10.182

11030 —— " 10.212

11031 —— " 10.027

11032 —— " 10.297

11033 —— " 10.152

11034 —— " 10.182

Dec. 13, 09. Reported rings were bad, flakeing off. Reported Tube stick perforations were being punch too deep.

Dec. 14, 09.

11035 6 Tubes from Battery Order
Lot # 20 Ni flaked Rd. # 13 Ni(OH)2
General Production
21% KOH + 2 gm LiOH Run Reg. 3, days old.
—— wt 10.142
11036 —— " 10.157
11037 —— " 10.062
11038 —— " 10.142
11039 —— " 10.002
11040 —— " 10.287
Ni peeled off some of the tubes.

Next Number in Book # 2 Long tubes

Notebooks by Edison and Other Experimenters
Group 9: Phonograph Record Composition Books

These five notebooks cover the period January 1909-October 1912. Most of the entries are by Ademor N. Petit. Several pages of loose notes by Edison have been inserted into four of the books. The books contain notes and drawings regarding efforts to produce an improved compound for phonograph records. Included are lists of numerous compounds, most of them utilizing shellac, which were tested by Petit for properties such as hardness, durability, ability to be cut by a recording stylus, and consistency under differing temperature and humidity conditions. The loose pages by Edison consist of directions and suggestions for Petit, along with comments on the ongoing status of the project. The inscriptions on some of those pages indicate that Petit sent frequent reports to Edison during the inventor's stay at his winter home in Fort Myers, Florida.

All five books have been selected.

Selected Books

Book #	N-Number	Inscription on Flyleaf
1	09-01-04	"Small Record Experiments upon paper foundation cylinder Records From Jan. 4th 1909 to Aug 22nd 1910"
2	10-08-22	"Small Record Experiments upon paper foundation cylinder Records From Aug 22nd 1910"
--	11-06-01	---
1	10-09-29	"Hard Record Blank Experiments"
2	12-06-19	"Hard Record Blank Experiments"

Notebook, N-09-01-04

Rome Co.,
MFG. STATIONERS,
69 FULTON STREET,
NEW YORK
40613

029.4

Edison Laboratory
Book No. 1 Small Record
Experiments upon paper
foundation Cylinder Records
From Jan. 4th 1909 to
Aug 22nd 1910

Jan. 4th 1909
Edison Laboratory.
Began work upon
experiments to produce
paper composite phono. Record.

Mr E. showed me a sample record which he said was made with shellac solution coated paper, wound tubular in the following manner, the end of the shellac coated paper is fixed to a mandrel provided with a winding crank, next to this is a metal roll made hot, mounted in a way to press upon the winding mandrel, the coated paper passing between the two, as the coated paper contacts the hot roll the shellac coating becomes soft and sticks fast to the adjoining coated paper around the winding mandrel this way a solid paper + shellac tube is formed of the desired thickness. The blank is now placed into a matrix made

Jan. 4th '09.

— made hot by circulating hot water around the matrix, the temperature sufficient to render the shellac plastic, the matrix so charged with a blank is placed onto a rubber expander, which is inflated with hydraulic pressure the blank is then expanded and contacts the record matrix to take its impression, about two minute pressure being sufficient, the pressure is now discharged and the blank contracts sufficient to extract from the mould.

A record upon a straight tube, not provided with bearings to fit upon the taper mandrel of the phono, simply a cylender not provided with means to carry the title of the record.

a blank was also shown to me, and the parchment paper used to form the blank.

I inspect the record under the microscope, the surface presented itself rough, ground-glass-like—

Jan. 4th 07

Mr E. asked me, in my opinion what made that surface so rough.
I told him I thought it was air, confined air, or it was the evaporation of shellac solvent.
He gave me order to go ahead and see what I could do to overcome the objections.

Jan. 5th to 9th

Fitted up my room in order to start experiments.

Jan. 11th to 16th

After close examination of the record handed me by Mr E. I concluded that the article in that form could not be commercially practical, particularly because it did not carry its title a blank must be made of such form that one end is reduced to take the impression of the title at the same moulding as the record itself.

11th 07

Completed a drawing for a device to carry Master way Record for Electro-Matrix.

[5]

Jan. 13th '09

Completed drawing for pair of Rolls to wind tube blank with one end butt inward to take title impression.

Jan. 18th

Completed drawing for Record moulding device to use with steam followed by compressed air.

Jan. 20th

Completed drawing for device to form blank with one end butt inward

Jan. 23rd

After sufficient trials I found the winding of a paper tube with one end turned inward was a failure to preform in a commercial way.

Jan 25th

Investigated solutions of gums & resins made Jan. 13th found the best solvents of those I used to be as follows — over

Jan. 25th

Completed drawings for Record Moulding device for use with hydraulic press.

Jan. 25th

Jutalung or Jutalong — Benzole
next best — Amyl Acetate
" " — Bi-Sul. Carbon
Asphaltum — Benzole
Balata — Benzole
" — Bi-Sul. Carbon
Shellac — Wood Alcohol
" — Grain Alcohol
" — Amyl Alcohol

The Amyl alcohol makes a clear solution and precipitates some impurities but it is not useful as a quick drying varnish. it may be good to add into alcohol solution to give the varnish more flexibility.

Alcohol solution of shellac to coat paper for record making is also not promising. because the absolute drying ~~etc~~ is difficult and when it appears dry it still holds alcohol, which evaporates when heated and causes the blank to stick to the matrix.

Feb. 1st

Completed sketch of a mandril to wind a tissue coated paper upon a strawboard paper foundation.

Feb. 4th

After several combinations of gums and Resins solutions to produce a coating material for the paper I found that the simple shellac was the best.

Feb 8th

Completed sketch of a mould for making and Rings to invert into blank for taking the title impression, of shellac coated paper.

Feb 10th

Most all volatile oils when heated with shellac will produce a caoutchouc-like mass that remains elastic a long time, Birch oil is most suitable for that, Fusil oil has about the same action.

Feb 11th

Gilsonite (Utah) becomes liquid at 350° F. and mixes with shellac to form a hard mass, and dry. An excess of Gilsonite makes the mass brittle. the mass cannot stand over the heat more than a fraction of an hour before it thickens. probably carbonizes the shellac. but as the shellac assume a higher temperature than its melting point it becomes harder & tougher.

Feb. 13th

The coated paper tubes made by first varnishing the paper and allowing it to dry then winding the shell on a mandrel by heating the coating of shellac with a hot roll is a difficult operation particularly on account of getting all the air out of between the layers. when the air remains confined between one layer and the next, even little blisters like, such blank does not mould good record surfaces.

Feb 13.

Shel-lac. a red powdered resin obtained from William H. Shell N.Y.
Dissolves in alcohol and 1/2 Benzol & 1/2 alcohol produces nice hard film - but brittle.

Does not melt to a fluid - but only to a thick Plastic mass

Mixed with Shellac it coagulates the latter quickly and produces a mass more brittle than Plain Shellac

Shel-lac is only a trade name for Acaroides Resin

Feb. 15th

found that a mixture of shellac in the proportions of

Shellac	6 parts.
Bitumite	3/4 "
Rosin	1/4 "
Fusel oil	1/2 "

makes a mass that remains pliable, for a considerable time.

Feb 17th

A moulding device for expanding the blank by hydraulic pressure made by simply forming the rubber like a tube with inturned ends to fit into like space at each ends is not successful, the water finds its way out and reaches the paper of the blank and so destroys its contracting power.

Feb 20th

Black Negrosine soluble in alcohol is a good material to color shellac black so is Bitumite but Bitumite requires a very high temperature to melt it - to high to be successful for liquid solutions that may remain as for sufficient time

Feb 23rd 07

Completed drawings for melting-pot and blank winder combined.

March 2nd

Carnaba was mixed with Birch-oil to form a good soft cutting wax of good quality perhaps to make master. It has considerable contracting quality.

March 16th

Completed detail drawings for Blank winding machine.

March 18

Blanks made by winding varnished paper and inserting a ring into one end for the title. ring moulded of the same varnished paper, works fairly well. the heat and pressure combines to cement the two together alright. one objection is that the end ring does not contract enough to slip out easy. the matrix would have to be made to suit this method.

March 20th '09

Mr E. handed me some Napthalene to mix with shellac. after few experiments found the proportion best for good hard quick selling mass. was 1 3/4 part of shellac to 1 Nap. it produces a yellow mass almost as hard as Shellac Glaze and is very much more fluid when hot.

March 27

Shellac 1 3/4 part. Napthalene 1 part and little Black Negrosine makes a good looking mass. #O.K.

Mr E. handed me some Stearic Acid and said that it was a very good material to mix with shellac. after trying found that the resulting mass had too much affinity for heat, the mass held in the hand for only a few minutes will soften enough to render it useless for record making.

March 25th

Completed drawing for paper trimmer.

March 25th 07

Found Terpin Hydrate a good material for mixing with shellac.

Shellac 5 parts
Terpin Hyd. 1 "
little Bitumite to color black.

March 30th

Made a mixture of Bitumite — Napthalene + Stearic acid to render shellac fluid enough, which is very fair.

Utah Bitumite 1 Part
Napthalene 1 "
Stearic acid 1 "
Temperature about 375° for 5 hrs.
Nap. evaporates 1½ oz in 12 oz.

March 26th

Moulded some records with hand made blanks of melted shellac mass, after One day the records that looked good immediately after moulding turned out blistered and the lap of the last layer of paper made its appearance; seems that the coating was not thick enough to overcome the natural alteration of the paper or the setting of it, and wherever a large blister showed up, it indicated that some air was confined between the layers of paper, which was compressed when the record was moulded and afterward distorted or expanded bringing the paper with it.

March 31st

Completed drawing for turning paper blank inward for the title end.

April 30th 09

Experimented upon different materials to discover a suitable compound to coat the paper.

found that shellac ought not to be melted at a higher temperature than 200° F. because it seems to harden quickly at higher temp. if it stands for a considerable time at even 200° F over dry heat, it also hardens, or coagulates or carbonizes

The fat oils or non-drying oils will mix with shellac in small proportions but does not after-ward harden. Waxes does not mix as a rule. found Montane wax the best but produces a mealy mass.

So far has not discovered anything suitable.

May 4th 07

After several trials at making blanks by coating paper with Hot solutions of Shellac & naph. cemented with Bitsonite I find the method difficult on account of the paper taking uneven coatings of the shellac mixture and the coated paper not winding uneven, being thicker on one side or the other or in the center. all attempts to prevent this trouble was not successful.

May 29th

When a tube is made of paper that contains moisture and afterward coated with record compound, if the thickness of record compound is not thick enough to over-come the setting of the paper, it goes with the paper. Have made blanks with tissue paper .002" thick and record coating about .001" thick. after the blank was formed it looked good for about 24 hours after that that contraction of the paper made the coated surface irregular. after the record was moulded, same thing resulted.

June 3rd 09

Several samples of paper used and made into blanks and moulded into records showed that a short fibre paper is not possible. the short fibre paper would sometime stretch enough to contact the matrix to take the record impression but did not contract enough to let go the matrix. the long fibre paper such as Bamboo fibre proved to be the best. next to that was the Manila fibre. probably made from Manila — Hemp. paper of such fibre is on the market as Rope Manila paper, so called because the paper manufacturers use the worn out Ropes to make the pulp. Parchment paper has considerable elasticity but a Hot solution of shellac — that is a mixture that contains no liquid solvent which has proven the most successful so far, does not adhear to such paper, it peels off after a time. aside from that it is so brittle that turning the end of the blank is not so practical as the Rope Manila.

June 11th '09

A good hard and substantial coating compound is prepared as follows.

Melt Utah Gilsonite	3	parts
pine Rosin	1	"
Naphthalene	4	"
Crude Amyl Alcohol	1	"

After the Gilsonite and Rosin are thoroughly incorporated the temperature may be lowered before adding the Naphthalene + Amyl Alcohol. this will be called "Thinner"

Melt Thinner	2¼	Parts.
Shellac	6	parts

Heat only enough to make the mixture suitable for coating. This compound will not stand long heating befor it hardens or coagulates or carbonizes. it should be used up as quick as possible, the addition of fresh Thinner + shellac does not stop the thickening of the previous melted quantity. the newly added quantity seems to not mix with the former, something like putting a raw Egg into water containing one partly boiled.

June 19th 09

Tried to squirt some tubes with the June 11th compound from a gun specially constructed; the thing was not successful. when the compound was liquid to flow through the die the tube could not be formed as expected. it would hang onto the die. when the compound became harder it was so tenacious that it would not shoot out straight; it would hang to one side or the other of the die, the difficulty is with the nature of the compound, when liquid enough. it is too sticky when little harder it is to tenacious — Elastic - rubber - like.

June 23rd

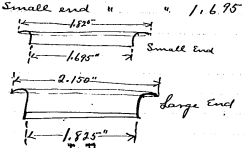
The best way to keep coating material made of naphtalene & shellac, warm is to heat it in a double kettle using boiling water. in this way the temperature is constant; and the compound does not coagulate so soon as over dry heating.

The Matrices inside Diameter
is 2.190" at the large end &
2.180 at " Small "
There is some variation in
the I.D. of all matrices

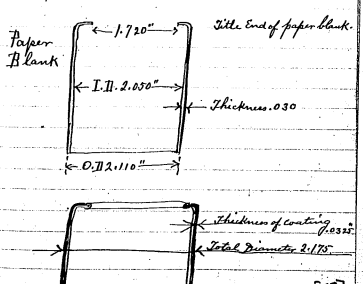
The inside length of the matrices
is 4 3/16"

July 6th

The dimentions of the entching end
of the record should be 1.825"
The Small end " " 1.695"



Metal .012" thick Brass.



July 16th

The Inside tube is made of cheap straw-board wound spiral upon a mandril 1.858" Diameter.
The thickness of the paper averages .023" thick.
The finished tube dimentions should be 4 7/8" long, (When Dry) &
O. D. 2.063"
I. D. 1.852"
When they are fresh and contain the moisture from the glue they are larger by a few thousandth.

There should be 4 ply of .023" stock and the inner ply of .010" stock

July 19th

Tryed to mould records by inserting the inner tube into the Coated blank and expanding both into the matrix in every attempt the inner tube bursted open! due to the non-elastic quality of the Straw-board.
The right kind of paper might answer alright!

July 26th

Completed drawings for a steam-heated melting pot provided with device to carry paper blank into the melted compound and on drawing out same a stripper is so arranged that it strips off the surplus coating thereby sizing the outside of the coated blank.

July 30th

Made several experiments with shellac such as dissolving it in liquid solvents and then precipitating it in order to extract the impurities, the shellac so purified will thicken or coagulate just as readily as before treating it such.

Have precipitated it from solution in alcohol with diluted Sulphuric acid about 10/o acid. +

from Amyl alcohol (Fusil oil) +

" Ammonia solution +

Borax —"

Aug 11th

Mr E. handed me some Chloro-Napthalene to use with 3 parts of shellac. Made some samples which proved to mix with more difficulty than the simple Napthalene and the resulting mass would become soft at lower temperature than the simple Napthalene mass. The proportions of Chloro-Napth. to shellac are 1 chloro — to 2½ shellac up to 1 " to 4 "
The introduction of chloro-napth. does not cure the trouble of frosting or gassing when melted. Chloro-Napth requires a higher melting point than Napth not less than 230°F. the simple Napth will mix well with shellac over boiling water and that is an advantage on account of the thicking of the mixture. Chloro-Napth with the addition of simple Napthalene mixed with shellac will assist to make a more perfect mixture but the resulting mixture does not harden as quick as either one or the other separately, & it also soften at lower temp. after the finished mass is exposed.

Aug 13th

Moulded some records with #O.K. coated blanks, the coating being .030" thick and the paper blank also .030" thick and spiral wound.
also moulded some blanks coated with .015" coating, the thicker the coating the better was the resulting records and they stood bitter the contracting power of the paper.

Aug. 16th

Diped some O.K. coated blanks into Alcoholic solution of shellac, after drying about 15 hours moulded the records did not contract out of the matrix, examined them 4 days later and was then fast to the matrix.

Aug. 19th

Ordered 1 Roll # 61L V.E. paper from O. B. Hastings, up to now this particular paper has shown better qualities for record making than all others experimented upon, it does not contain much water and what is there seems to evaporate quicker when heated than other papers it has a structure that allows stretching and contracting, it has good affinity for the coating material and is more permanent when in record shape than other papers tryed up to date.

Aug. 20th

The coated blank should be as perfect as possible on the surface, if there are hollow spots or even small pin-holes - like the moulded record from such blank is imperfect, where the hollow spots were the record is moulded - but the hollow remains due no doubt to the air confined in the hollow while pressure applied, and in case of the tiny pin holes, they mostly disappear to view but the reproducer finds them all.

Aug. 21st

Pine Rosin and shellac in any proportion will mix, the least quantity of Rosin the better because it destroys the thoughness of the shellac, renders it more brittle also more sticky to the hand leaving impression of the fingers

Aug 23rd

In the making of the paper tubs by rolling one layer over the other it is necessary to use a glue that has some elasticity and of great adhesiveness for when the tube is expanded in the matrix if the glue is not though the layers of paper will loosen and the resulting blank or record will have no stability, will distort out of true form. if the tub could be made up of one solid piece, that is like a metal tub, it would be the ideal thing

Aug. 24th

Chloro-Naph.	2 Parts	This compound makes a very good though coating but must be heated at about 250° F to make it fluid enough and has the same disadvantage of coagulating in about 1 hour, so rendering it useless.
asphaltum to color	1 "	
Shellac	6 parts	

Aug 30th

Manila Gum Elemi. mix well with shellac at 240° in all proportions, gives a clear mass, more brittle than Shellac. Elimi heated for a short time evaporates its natural solvents and assumes a rosin like mass, but not so sticky as pine rosin.

A brilliant mass, hard enough, not sticky, is produced as follows

Lamson's #1 Asphalt	1 Part	melt + add
Elimi	1 "	" " + "
Terp-Hydrate	1 "	" " + "
Shel-	5 "	Raise Tem. 300°F.

Sept 6th

A cristal of a melting point same as Shellac that is not volatile would be the most appropriate material, for when the temperature is raised above 220°F. the shellac seems to undergo a change that is, it will coagulate or otherwise it assumes a rubber-like mass, and this appears to take effect with nearly everything that will melt with it.

Sept 10th

Elimi mixes with waxes to harden them, also with asphaltum to reduce its melting point.

Sept 13th

Made a Compound of Viscose with Zinc-Oxide & wood Pulp, squirted a tube about 14" long, left to dry over night. Next morning it had Contracted across the Dia. ___ was very tough, gave it to Grumbaf for further treatment.

Made also a mixture of Viscose with Zinc Oxide and Dried over night. This mixture presented a much finer structure & harder than the sample containing the wood pulp. Dr. Croker says that the zinc oxide combines with the Soda in the Viscose to form Sodium Sulphate.

Sept 14th

Mixed Viscose with mixing Rolls for about 1 hour the Viscose assumed a more elastic quality. left to dry in that condition

Sept 18

None of the Viscose Samples have been found suitable for working into records, particularly on account of the great shrinkage after the decomposing treatment and drying and the further reason that it cannot be made plastic again.

Sept 24th

#' 616 V.E paper is .003 thick, should be wound upon a mandrel 2.070" Dia and make 14½ turns. the extra half turn is particularly to offset the overlap of the paper sheet on the opposite side.

Sept 29

Have found that Gum Arabic dissolved in cold water to a consistancy of glycerine is excellent for properly cementing the paper tube. it works well cold and dries quick enough to be practical.

Oct 8th

Made Mixture of Nap. 1 lbs.
Rosin 1 oz
Shel 1½ lbs

Melt Nap. with Rosin, Raise temp. to 250°F. then add shellac gradually until all dissolved filter & lower temperature to 230°F. for coating. seems to give a more homogeneous mass than when more shellac is added. also does not alter on the records surface after standing a while.

Oct. 14th

The method of dipping the paper blank endwise into the coating compound is troublesome due to the flowing of the compound before it is set; the result is a blank surface that is larger in Dia. in some spots than it is in others; in reality the blank should be on the surface in straight line or it would be better if the center was a shade higher

Oct. 20th

Moulded some very fair Records with the Oct 8th Mixture, the greatest trouble experienced in this lot was the getting out of all the air from between the Matrix & the blank, due to the unevenness of the blank surface.

Nov. 3rd

The method of Rolling the paper blank into the compound and immediately scraping off the excess is so far the best method employed, not only it produces the most evenly coated blank but, it is more quickly done, specially when the turning of the blank is done by power.

Nov 11th

In winding paper, to form a tube it is essential that a elastic body should press the sheet as it enters the roll or tube for the purpose of squeezing out excess of glue and air bubbles that might lodge between the layers, a Roller was tried 3 times on different devices and each time was a failure, for the reason that it allowed some excess glue to lay between the layers and of course some air also, which does not show on the moment, but the next day when the tube is dry, the blisters are very prominent.

Sor 15 cl

After the paper tube is wound it is rolled upon a hot plate, (steam heated) about 10 minutes. that dries the outer layers and sets it throughout enought to allow driving it out from its mandrel which cannot be a collapsable one. After the tube is free it is stood on end upon the steam table to completely dry that end, so that the pressure necessary to turn the title end will not alter the proper dimentions of the opposit end.
The Mandrel or Rubber used to turn the title end must be about .005" smaller because there is a shrinkage of the tube immediately after extracting from its winding mandrel. After the tube is turnt on the title End it is put to dry in the open for about 24 hours then it is placed into a oven of a temperature 190°F for 1 hour. that expelles enough moisture to work well. when upon taking the tube from the oven it is immediatly dipped into a shellac solution of shellac and allowed to stand in

the open for at least 4 hours, then it is placed again in the oven 190° F. to expell the alcohol and harden the shellac. Any time after that the tubs may be coated with the record compound.

Nov 23

Made a lot of records with Oct 8th compound. with tubs having 15% layers of paper. most of the records showed som air spots. due to the coating being little too thin. it would be possible to mould perfect records with such thin coating if all matrices were straight, but has found that there is a variation of as much as .006". So that with just a little thicker coating it flows more.

Dec. 1st

The Rubber expander must be enough smaller than the inside Dia. of the tube to lean the tube entirely after the record is moulded. the Dia. of the Rubber should be at least 2 inches and so fixed at both ends that there is no water escape.

Dec. 4th

Made a compound of Nap 9 g. cicrinis 9 g. & Oct 8th mixture 1½ lb. Moulded a few Records. This mixture moulds better, it flows easier, but it is too brittle and coarse, the record surface being very scratchy.

Dec. 9th

Tried to make tubes by drawing the sheet of paper over and under 2 tubes provided with slit openings for allowing the glue to exude from for coating the paper sheet on both sides; so long as the sheet is continuely drawn this method apears to be ok, but the moment the tention is off the sheet, the glue then flows its way out and drips over the device.

Dec. 14th

The Coating of tubes by dipping it into the Comp. and afterward rolling upon a smooth table or Rolls is not successful, the trouble lies in the Comp. not plastic enough, the coating is so thin that cristalization begins almost immediatly and was in that condition it cannot be displaced to form it without pulling it away from the paper.

Dec. 17th

This paper Record with Oct 8th Comp. coating if reinforced with a stiff inner tube and subjected to a temperature as low as 10° above 0 will expand enough to crack, that is, the inner tube reinforcement will expand while the coating probably has a tendency to contract, at any rate it becomes more brittle. The Cracking of the record surface is certainly due to the unevenness of expansion & contraction of the paper & coating. But when the Record is provided with only about 1 inch long inner tube reinforcement and subjected to the same low temp. the Record surface remains unbroken.

Dec. 18th

Tried to make End Ring with .012" Tin, when the Blank is made and afterward annealed, then it draws as well as Brass, but will crack open if not annealed.

Dec. 23rd

Made a lot of Records of tubes made of #616 V.E paper sized with Gum Arabic, This Gum Arabic binds the paper more compact than other Gums of approximately the same Cost. Some more trouble was experienced in getting out all the air from between the Matrix and blank. upon investigation of the Matrices found that it was not straight bore. this defect cause the blank to close in first on the high spots and so imprison the air.

Dec 30th

Made some blank tubes with Visine as a size, the result was not favorable. this size will not bind the layers of paper enough to stand colapsing, when a tube is not compact enough to stand binding in without the layers of paper letting loose such blank tube will not mould a good permanent record. further more it is very liable to split open in expanding it.

Dec. 31st

Mr Edison ordered me to go ahead with designs to make the Record on commercial scale, said that Mr Shoupe was hereafter chief engineer of the Laboratory and any thing required to be laid out on the drawing-board he would do as soon as I would give him sketches of what was required to be developed.

Jan 7th

Mr Ubbon called to investigate the record saying he wished to take some with him for the purpose of experimenting upon new Reproducers to suit the Hard-surface Record with object to obtain louder tone.

Jan 7th

Mr Dyer called to look over my records and investigate the process of making. I complained to him that quicker actions would result if I could have my devices made in less time. having only one man to do it all is not enough.
He remarked that the Result of my showing was very encouraging.

January 1910

Jan 5th

Have completed plans for a new Record Moulding device having for improvement an Expander of Rubber closed at one end, this does away with the Taper wedge which was liable to be missed in mfg. on a large scale.

Jan. 7th

Completed plans for new tube winding machine which provides for proper winding gluing & cutting of the paper

Jan 10th

Completed plans for a mould to make the new Rubber Expander which is open only at one end.

Jan 11th

Mr Spitkel starts on making the new Moulding Device for Records.

Jan 12th '10

Investigated the process of making the matrices with object to overcome the bulging out of the Sub-Master which is the Bug in commercial-Record matrices.

Mr Atkin who appears to have considerable to say in this matter tells me that the very thing I want to overcome was gone over by Mr Kelsey Mr Near and Mr. Elsworth and himself, with results that the matrices as now produced are absolutly as straigh as possible to make them.

Jan 15th

Tested the strength of the paper Blank tube by expanding with Record moulding device. A tube wound of #616 V.E. Paper 14½ layers and dried will burst when a pressure has reached 350 lbs to □"

The tubes will expand .030" before bursting

Jan. 31st, 10

Have been ill for two weeks
Just returned to start in again.

Mr. Edison gave me some Chloro-Naph.
to use for making coating material
with instruction to use 1 to 2 parts of
it to 1 part of Shellac. and that
lamp black may be incorporated if
ground into the Chloro-Naph before
mixing with shellac.

Feb. 2nd

Completed New Record moulding device
the important feature of which is an expander
with only one end open. thus reducing
the leakage possibility. in the old device
the Center spindle projected up through
the Expander. the spindle being of
metal was liable to destroy the matrices
when they were inserted. this new
device eliminates that altogether.
further-more there are no loose parts
like wedges + hammer to look out
for.

Feb. 3rd-10

Delivered to Mr Shoefel Sketches of the Inner tube with instruction to make a device for making them in a commercial way.

Feb. 3rd

Del. to Mr Sh. Sketch of Large-End Metal Ring with model. with instruction to make dies for manufacturing.

Feb. 3rd

Del. to Mr Sh. Sketch of the Small-End Metal Ring (no model) with inst. to make dies for Manuf.

Feb. 4th

Mr Dyer & Mr Wilson called to inspect my work. demonstrated the Tube winding by power which is in progress of construction, and the new moulding device. played some records. they both expressed feeling of satisfaction.

Feb 7th

Received 12 Rolls #616 V.E. Paper 49 1/2" wide
Cost 11¢ per lb. 4 1/2 cent extra for Cutting

Feb 12 - 10

Completed a coating device for the paper blank

Feb 18 - 10

The device which is a small container 4 inches long by 1" Drip x 1 wide provided with a slot near the bottom on one side having a valve on the inside to shut off the supply when the record blank is coated, the trouble with this is that it leaves a streak of coating material just adjacent to the valve, thus making impractical in that condition, but it may be possible to improve it to overcome the difficulty.

Feb. 18 - 10

Sent a letter to Mr Edison in Florida explaining the trouble of coating material.

Feb. 22. 10

Designed new device for coating which is an improvement of the one described above.

March. 1st '10

Made experiments of mixtures with Chloro-Toliol that Lancaster handed me. have found that this fat is bitter in every way than any thing used up to now. The proportions are 7 parts of Chloro-Toliol to 12 parts of shellac. and colored with 1/16 part of fat aniline.

3 – 2 – 10

Made mixture of Anilene 1 part & Stearic acid 1 part heated for 15 hours to boiling temp. the result was a dark brown & flaky mass. which mixed very well with shellac but when a sufficient quantity was added to render the shellac fluid enough. the result was too soft for good record.

3 – 3 – 10

Tried Salicilic acid with shellac the melting point of the acid was too high to obtain any kind of desirable results.

Tried Salicilic acid with Chloro-Naptha it make a good looking mass but does not harden quick enough.

3-4-10

Pitch with shellac renders it too sticky for use.

3-9-10

Tried Chloro-Toluol 1 part
Fat Aniline 3/8 "
Soda Carbonate 1/8 "
Shellac 1 1/4 "

The addition of the Sod-Carb. causes the mixture to remain soft.

Chloro-Naphth 1/2 part
solvent-Naphtha 1/8 "
Shellac 1 "

The solvent Naptha when heated is so volatile that this would not do to mix in the open.

3-12-10

Tried Chloro-Naphth & Paraldehyde with shellac, the paraldehyde does not improve the mixture as it forms bubbles, or gas.

Tryed Plain Glycerine with shellac at high temp. the tris seems to combine and when cool the shellac is rendered more brittle, yet plastic.

3-14-10

Tried Accanilide with Chloro-Naphthal and Chloro-Tolul and shellac, at a temp of 240° F. there is no bubbles and the mixture looks good.

3-17-10

Accanilide 1 Part
shellac — 1 Part
mixes well. Result too soft, and remains that way for long time.

Chloro-Naphthal — 1 Part
" Tolul — 1 "
Accanilide 1/2 "
#26 Aniline Black 1/32 "
Call this Solvent #1

Solvent #1 1 Part
Shellac — 1 1/2 part
added more Solvent #1 to render fluid enough. result too soft.

3-21-10

Tried Accanilide with Resorcellon
N.G.

3-23-10

Tried Plain Napthalene with accanilide & shellac. Result not good.

Accanilide with Rosin, not good.

3-30-10

Tried to combine chloro-napthal. with chloro-Toluol by boiling half & half in a flask for 10 hours there seems to be no change except that the two are simply mixed, but separate crystals, or flakes.

Chloro-Toluol 1 Part
Accanilide 1/32 "
shellac 5 parts
Result looks good. try again

Chloro-Toluol 1 Part
Shellac 1 "
Result — Toluol much in excess when cold the Toluol comes out. The best proportion is one part Toluol to two & ½ of shellac.

3-31-10

When coloring the mixtures of shellac with chlorinated Naphthalene or Toluol the alcohol soluble Aniline makes a harder & more brittle mass than when the Fat Aniline is used, the fat-aniline also retards the hardning of the mass and seems to alter the record surface, after a time, perhaps if the coated blank is allowed to stand and harden well before moulding a record, it may not alter. try again.

Tried again to Combine Chloro-Naph & Toluol by boiling up to 500°F. Cant do it.

Chloro-Naphthal 1 Part
Chloro-Toluol 1 Part
Accanilide 1/8 "
Shellac 3 Part

Makes good looking mass, but must be worked quick for it grows thicker when heated, to 260°.

4-1-10

Fried Glycerine 1/8
Salicylic acid 1/16
Shellac - 1/2
the mixture must come to boiling before thin enough. N.G.

Salicylic Acid with Rosin produces a sticky mass.

4-7-10

China Wood Oil will not mix with shellac.
C.W. Ol. will gelatonyze when heated at low temp for a long time or quickly at high temp.

C.W. Ol. upon paper and heated in oven temp about 220° F. for about 1 hour will form a soft glassy coating.
When allowed to stand in the open the paper will absorb it.

The addition of Gum Sandarac to shellac mixture is no improvement. in fact it renders it more brittle and subject to forming bubbles

4-8-10

Chloro-Napthal 2 Parts
" Solvent -8 "
Lamp black 1/64"
Gelamite 1/16 "
The lamp black remains in the filter. does not improve the mass.

Chloro-Napthal & lamp black in proportion to form a plastic mass makes a fine soft impression wax.

4-8-10

Tried Phtalic Acid with shellac. it is too volatile when heated.

Tried Resorcin with shellac Resorcin is of too high melting point. Resorcin has the quality of rendering the lac brittle. may be good to add to those mixtures that have a tendency to not harden. try again.

Resorcin to costly

4-8-10

Liquid Chloral Hydrate, this is too Volatile and the odor is not pleasant and is no improvement over other solvents

4-11-10

Chlor Naphthal 2 parts
" Toluol 3 "
Gilsonite 1/16 "
#24 Aniline Black 1/24 "
This is called Solvent #4

Solvent #4 1 Part
Shellac 1 1/2 "
fair compound.

4-15-10

Naphthalene 1/2 lb
Shellac 13 oz.
Good, but exudes a white frost-like substance, probably naphth.

Naphthalene 1 Part
Rosin 1/16 "
Shel. 1 1/2 "
Better less exudation of frost like, subs.

4-19-10

Highest Distilled Chloro-Toluol 1 Part
Shel - 2 "

This is N. G. the boiling point of the Toluol is too high, it decomposes the shellac.

Chloro Toluol 4 oz
Fat Aniline black 3/16 oz
Shel - 7 oz
Temp. 240° to 260°

4-19-10 #1

Received 100 lb paper cut 4 3/16" wide.

Chloro-Toluol 4 oz
#26 Aniline Black 1/16 oz
Shel - 7 oz
Temp 240° to 260°

4-19-10 #2

This does not work as smoothly as the #1

4-20-10-#16

Chloro-Naphthalene 1 Part 6 oz
Fat Aniline Black 3/16 oz
Shellac 1½ " 9 oz
Temp. 260° to 285°

Good but coagulates in 5 minutes

4-22-10-

Received from Machine shop the new Blank Coating device. this is a steam Jacketed tor-like melting & pouring & coating arrangement, delivering the dope from near the bottom, through a slot, on the outside there is fixed a straight edge and a movable one so arranged that when the blank is fully coated the movable straight-edge or knife cuts off the delivery. The blank is revolved by power directly adjacent to the slot or opening through one side adjacent to the straight edges.

4-22-10

Delivered to Mr Dyer 4-½ records
Me made April 18th Dope # 18
" " " 19th " " # 12
two " " 20th " " # 15

4-25-10

Chloro-Tolud — 4 Parts
Napthalene 1 "
Resin 1 "
Shel 2 "
Too Soft. Plastic

P. 2

4-26-10

Chlorinated Turpentine	1/4 oz
Shellac	1/8 oz

Condenses quicker than most other chlorinated stuff.

Gum Elemi (Soft Manila)	1/4 oz
Chloro-Lidenol	1/4 "
Locus gum	1/8 "

Chlorinated glycerine	1/4 oz
Shellac	1/4 "
Fat Black Aniline	1/16 "

Turpentine	1/4 oz
Fat Black Aniline	1/32 oz
Shellac	3/4 oz
Added Turpentine	1/8 oz

Resorcine	1 Part
C. amphor	1/16 "
Turpentine	1 "
Shellac	

N. G.

4-26-'10

Naphthalene	1/2 oz
Acanilid	1/32 "
Shellac	7/8 "
Black Fat Aniline	1/16 "

Exudation of white frost on stuff.

Acanilide	1/16 "
Naphthalene	1/2 "
Rosin	1/8 "
Black Fat Aniline	1/16 "
Shellac	1 oz

Looks good when in molten state; Requires some time to harden. Result, too soft

Chloro-Naphtha —	1/2 oz
Acanilide	1/32 "
Black Fat Aniline	1/32 "
Rosin	1/16 "
Shellac	3/4 "

Chloro-Naphthol —	1 oz
Fat Aniline	3/16 "
Acanilide	1/8 "
Shellac	7 oz

Fair

4-28-10

Chloro-Naphthol	4 oz	
Accanilide	1/4 oz	
Rosin	1/8 "	#9
Shellac	5 oz	

20% lb
Mr Swinson inspector

This is the the best dope made up to date. Brilliant, Hard & smooth.

5-2-10

Chloro-Toluol	4 oz	
Rosin	1/2 "	#1
Accanilide	1/4 oz	
Shellac	5 oz	

There was exudation of white frost.
The Toluol seems to not be proper.

Chloro-Toluol	1/2 oz	
Rosin	1/8 "	
Accanilid	1/32 "	#7
Shellac	1 oz	

Less Exudation of white frost.

Chloro-Toluol	1/2 oz
Rosin	1/8 "
Accanilid	1/16
Shellac	1 oz

Too Elastic.

5-6-10

Chloro-Naphtha.	4 oz	
Accanilid	1/4 oz	
Rosin	1/2 oz	#1
Shellac	7 oz	

Made 14 Blanks. Drops looks good but quite [illegible] #1

Chloro-Nap-	4 oz	
Accanilid	1/4 oz	#2
Rosin	1/2 oz	
Shellac	6 1/2 oz	

Temp. 300° F. & reduced to 260°. Made 14 blanks. All fair but drops dont appear round enough.

The trouble now is in coating the blank perfect. When the blank surface is not even - if it contains some pin holes - or gas bubbles below the surface, the resulting record may show up good immediately after coming from the matrix, but after a time the gases that were into the coating were naturaly compressed when moulding the record. And it also expands again forming tiny blisters. The gases over

5-6-10

are generated when the compound is in moulten condition. Close observation as shown that shellac is the material that forms the gases. When shellac alone is melted it is free from gases at first, but very soon bubbles are formed which go on increasing until the shellac has evaporated all the volatile matter, then the remaining quantity is like a spongy mass and cannot be forced again.
The Chloro-Nap acts as a liquefier, it does not form gas not even at evaporating temperature and when shellac is added in proportions to make a desirable mass the shellac predominates and will condense in time the addition of Acetanilide is a help to the Chloro-Nap. to better combine with the shellac. the Rosin is also there to render the combination more fluid so that it can be filtered through a 160 screen. When the paper tube revolves before the molten mass it is not so hot as the molten mass and it seems that simply the heat of the molten mass draws gases from the paper tube or the difference of temperature produces the bubbling, which is the stumbling block.

5-9-10

Chloro-Nap-	4 oz	
Acanilid	5/16 "	#1
Rosin	1/2 "	
Shellac	6 "	

Made Blanks at 240°-250° & 260° at 250° it works best at 240° it is little too thick. at 260° it is too fluid.

5-10-10

Chloro-Nap-	4 oz	
Acanilid	3/8 "	#1
Rosin	3/4 "	
Shellac	7 oz	

Made Blanks at 240°-250-&260° Mass little harder than above formula due to more Acanilide & more shellac. filtered through 160 screen at 260°F.

5-10-10

Chloro-Nap-	1/4 oz
Rosin	1/32 "
Acanilid	1/64 "
Shellac	1/2 "
Arrow Root	1/8 "

Makes very smooth to the touch, little too thick to work well. try again

5-13-10

Chloro-Nap-	4 oz "	
Rosin	1/2 oz "	
Accanilide	5/16 "	#1
Shellac	5 1/2 "	
Arrow-Root	4 oz "	

Made blanks, & pressed Record, was too gritty, but there was no gases or bubbles - try again.

Chloro-Nap-	1/4 oz "
Rosin	1/32 "
Accanilide	1/64 "
Shell -	1/2 "
Talk	1/4 oz

Was gritty

5-16-10

Chloro-Nap-	4 oz
Rosin	1/2 "
Accanilide	1/4 "
Shellac	6 1/2 "

Made Blanks. Fair

5-17-10

Chloro-Nap-	4 oz
Rosin	1/2 "
Accanilide	1/4 "
Shellac	6 1/2 -

Made blanks at 240° and up to 300°
The dope is not permanent, allows after 10 hrs;

5-18-10

Chloro-Nap.	6 oz	
Rosin	3/4 "	#1
Dessinlisic	3/8 "	
Shellac	10 "	

looks good

5-19-10

Rosin	1/2 oz	
Yellow soap	1/4 oz	
Mg.		

Rosin	1/4 oz	
Scraps	1/4 "	Filler #2
China Clay	1/4 "	

Chloro-Nap.	3/8 oz	
Locus gum	1/4 "	Filler #3
Pin Clay	3/8 "	

Rosin	1/2	
China Clay	1/4	[illegible] at 400°
Shellac	1/8 "	Filler #4
Dessinlisic	1/64 "	
Chloro-Naptha	1/8 "	

5-20-10

Chloro-Nap- 4 oz
Acramide 1/8 oz
Sandarac gum 3 "
Rosin 1/2 "
China Clay 3 "
Talk 2 "
Filler #5

Coated some blanks, was very full of air bubbles, due to it being too thick. Try Again. Dope is good. For first coating.

Chloro-Nap- 3/8 oz
Shellac 1/8 "
Heated to 500° F.
Was too soft added 1/8 more of shellac and Raised temp to 530°. Coagulated.

Chloro-Nap- 1/2 oz
Shel - 1/4
Gum Sandarac 1/8
Rosin 1/16
Raised temp to 510°
added Acramide 1/16

Naphthalene 4 oz
Shellac 4 "
China Clay 2 "
Filler #6
Heated to 270° F filtered
Coated blanks, looks good.

5-21-10

Chloro-Nap-	6 oz	
Rosin	1/2"	
Ac. Anilide	3/8"	#1
Shel -	8"	

Naphthalene 4 oz
Shellac 4 oz

Chloro-Nap —	6 oz	
Rosin	1/2"	#1
Ac Anilide	3/8"	
Shel —	10 oz	

6-23-10

Chloro-Nap-	6 parts	3/8 oz
Elem-Gum	2 "	1/8
Accanilide	1 "	1/16
Shel	10 "	5/8 oz

Too soft. Put on steam table for 1.30 hrs. and was fluid enough to coat blanks

Try again

Magnesium Sterate
Chloro-Nap —
Shellac —

Accanilide
Magnesium sterate
Shellac

6-23-10

Chloro-Nap 1/4
Aluminum chloride 1/4
Shellac 1/4

Chloro-Nap- 3/4 oz
Magnesium stearate 1/4 oz

Chloro-Nap- 3/8 oz
Magnesium stearate 1/8 oz
Shellac 5/8 "

June 1st

Chloro-Nap 1/4 oz
Rosin 3/16 "
Acanilide 3/32 "
Shellac 21/32 "

Chloro-Nap 1/4 oz
Manoxa lime 1/32
Acanilide 1/64
Dont combine

Chloro-Nap- 1/4 oz June 2nd
Phosphate of lime 1/32
Dont combine

Chloro-Nap- 1/4
Resinated Alumina 1/8
Shellac 1/8
Coagulated at once. Temp. 400°F.

6-3-10

Found it possible to strip the coating from paper tubes by heating the coating over a flame to the melting point then revolve against a knife edge, this will be advantageous in using over & over again blanks that have been improperly coated or moulded.

6-3-10

Moulded 14 records, every one good, found that the blank must not be heated so much as to make it stick to warm matrices, it should be heated only sufficient to be slightly plastic, about the same as celluloid when in hot water.

The blank moulds a more permanent record when it is allowed to stand about 10 day after coating, the dope during that time settles and probably presses out some of the gases from the interior

Inspected some Records made during the months of Oct & Nov. '09 of Naphtalene 1 Part Shellac 1½ Part & Resin 1/4 part, Imp. 240° F. which Dope was then considered good. the Records do not now prove to have retained permanency.

6-7-10

Rosin 1/8 oz
Zinc Carbonate 1/64 "
Effervest.

6-6-10

Benzoic Acid 1/64 oz
Shellac 1/8 "
Chloro-Nap -
W. Flour - N.G.

6-9-10

Benzoic Acid (from Toluol)
with Magnesium Carbonate combine
to produce a glassy mass. (Rosin-like)

6-9-10.

Benzoic Acid 1/4 oz
Magnesium Carbonate 1/64 oz
Chloro-Nap - 3/8 oz
Shel - 5/8 "
Palmitic about 1/6 "

Bakerlite (intermediate product)
with Chloro-Nap does not combine.

6-10-10

Colophene oil 1/16 oz
Shellac - 1/4 "
There is a combination after boiling, but
decomposition after 10 m., the mass is very tough.

6-11-10

Balata gum - previously dissolved in
Benzole and the latter allowed to
evaporate, Melt and add some
Sulphur, there is a combination
the result is a soft mass.

6-13-10

Distilled Rosin 1/8
Colophene oil 1/64
Shellac 1/8
Makes Hard, but brittle mass.

Stearic acid with 1/4 oz
Mag. Carbonate 1/64
No combination

Colophene oil 1/64 oz
Chloro-Nap - 7/8 "
Benzoic Acid 1/32 "
Shellac 1/2 oz
Too soft

6-12-10

Distilled Rosin 1/4
Chloro-Nap 1/16
Benzoic Acid 1/64
Shellac 1/4
Melts at low temp. Mass is too soft
Double the quantity of shellac does not
reduce the plasticity of the mass enough.

6-14-10

Stearic Acid (Commercial) 1 oz #6/14
~~Benzoate of Soda~~ 3/16
Melt, does not appear to combine
but the result is a compound that
looks permanent and compact.
probably would make good Master
Wax. Try Again with more B. So.

6-15-10

Stearic Acid 1 oz #2
Zinc Oxide 3/32
Mag. Carbon. 1/16

Stearic Acid 1 oz #3
Zinc Oxide 1/16
Mag. " 1/16

Stearic Acid 1 oz # 8/15
Benzoate Soda 5/32

6-15-10

Stearic Acid 1 oz #8/14
Zinc Oxide 3/64

#6-8/14-10 1/8 oz
Shel- " 3/16-1/16
Temp 240° F. Liquid enough but
faltu.

Try Again the Combination of
Stearic acid in Benzoate of Soda.

Stearic Acid 1/4
Chloro-Nap- 1/4 #6-6/15-10
Benzoate Soda 1/64

#6-6/14-10 - 1/8 oz #7/15
Shellac- 3/16-1/16
Looks fair. Temp 240° F. Try Again

Stearic Acid 1 oz #8/15
Benzoate Soda 5/32
Melt over slow fire in about 2 hrs.
The So. is all taken up

#6-15-10

Chloro-Nap- 1/2
Phosphate Lime 1/32 #9/15

#6- 6/14 -10 — 1/32
#6- 4/14 -10 — 1/32 #6- 11/15 -10
Chloro-Nap- 4/32
Shel- 12/32
Looks like Combination that is fairly hard, but granular. Hard-Nap-like.

6-16-10

#6- 8/14 -10 — 1/8 oz #6- 14/15 -10
Shellac 1/4 "
Looks Good, Liquid Enough
Combination, but Granular.
Worth trying Again

#6- 8/15 -10 — 1/8 oz #6- 15/15 -10
Shellac 3/8 "
Combines, but produces a mass
that is too gummy.
Worth trying again

6-16-10

#6- 14/16 -10 — 1/8
added shellac. 3/8
Bubbles due to thickness of mass.

Chloro-Nap 1/2 oz
Sodium Phosphate 1/64 #6- 4/16 -10
Action and a precipitate.

4/16 — 1/8 oz
Shel- 3/16 # 4/16
Looks Good
try again with more shellac

4/16 — 1/8
8/15 — 1/16 # 6/16
Shel- 3/16
Combines to makes a mass that
cristalizes, but result is too gummy
worth trying again

4/16 1/8 # 8/16
14/16 — 1/16
Shellac 1/4
Good Compact Mass that cristalizes, but is
not tough Enough Try Again. More shel.

6-16-10

Steric Acid - 1/4
Zinc Oxide 1/32
Strontium Carb. 1/32 N. G.
Dont Combine

Steric Acid 1/2 #9/16
Sodium Bromide 1/32

Chloro-Nap - 1/4 #10/16
Sodium Bromide 1/64

Chloro-Nap - 1/4 #
Zinc Borate 1/64 N.G.
Dont Combine

Chloro-Nap 1/4 #11/16
Resinated alumina 1/64
Action

Chloro-Nap - 2 oz
Resinated alumina 1/4 #12/16
Combines

1/16 1/8
15/16 1/16 #13/16
Shel - 1/4
Looks Good try again

6-16-10

#8/15 - 1/8 oz Emmin-pentin #14/16
Shel - 1/4 "
Looks Good. Liquid enough
not much Bubbles
try again

6-17-10

Magnesium Stearate 1/2 #1/17
Steric Acid 1/8

Alpha Napthol 1/8 oz
Shellac 3/8 " Iron not
add Chloro-Nap 1/4 " does not harden
it enough. try again

Chloro-Nap - Magnesium Stearate
& Zinc Stearate
try again #4/17

Chloro-Nap & Manganese Borate
#5/17

6-18-10

Alpha Napthol 1/8
Shel - 3/4
Abietic acid 1/16

6-18-10

Chloro-Nap- & Manganese stearate #1/8 N.G.

Monochlornaphthalene & alpha Napthol N.G.

Napthol & Formaldehyde. N.G.

1/8 — 1/8 oz
Shel- 1/8 oz Looks fair. Try Again with more Shell.

6-20-10

Chloro-Nap- 1/2 oz # 4/20
Alpha Napthol 3/8

Alpha Napthol 1/2 oz # 3/20
Formaldehyde 1/2 " boil for 5 hrs. produced a clear Brittle Mass.

Alpha Napthol 1/8 oz # 2/20
abietic Acid 3/16 "
Acetanilide 1/16 " boil for 4 hrs
Glassy Brittle Mass

6-20-10

2/20 1 Part
Shellac up to 5 parts did not reduce the Brittleness.
Chloro-Nap in Small quantity makes it Tougher.
Try Again

6-21-10

Boil Shel- 1/20 in Water 5 hrs. # 1/20
add 5/16 oz. of # 1/18 & let water Evaporate produces tough mass.
The Shellac and mixtures may boil in water for a very long time without Coagulating.
There is difficulty in getting rid of all the water at the end. Causing Bubbles.

1/8 — 6/16 oz # 2/21
Rosin 3/16 oz. Mass too granular
Shel. 10/16 oz
Hard Mass but difficult to rid the Bubbles.

More shellac will make it Bubble more.

6-22-10

Chloro-Nap- 3/16 oz #1/22
Sterate Lead 1/16
Shel- 1/16
More Liquid than All Others.
Try Again

Chloro-Nap- 3/16 #2/22
Antimony Sterate 1/16
Shel- 1/4
Looks Good try again

Chloro-Nap- 3/16 #3/22
Copper Sterate 1/16
Shel- 1/4 Too-Granular
looks good Try Again

Chloro-Nap- 1/4
Copper Sterate 1/32 #4/22
Nickel " 1/64 Bubbles
Zinc " 1/64
Makes Good mass - but becomes
too brittle after a week.

Stear. Antimony 4/64 #5/22
" Lead 4/64
" Copper 2/64

6-22-10

Chloro-Nap- 6 oz
Sterate lead 2 "
Shel- 8 oz
made blanks. Too dry

6-23-10

Monochlorenapthalene
Alba Napthal #2/23
Hydrochloric Acid

6-24-10

Chloro-Nap- 4 oz
Rosin 1/2 #1/24
Acanilid 1/4
Sterate Lead 1/16
Shellac 6 1/2

Chloro-Nap. 7/32
Alba Napthal 1/64 #3/24
Sterate lead 1/4 of 64 Remains Gummy
Acanilide 1/2 of 64
Shel- 4/32

Monochlor Napth. 1/8 oz #4/24
Shel- 1/2 "
Extra Chloro Napth. 1/4
Looks Good Remains Gummy
Try again

6-24-10

Chloro-Nap- 7/32
Mono-chlor Naph. 1/64 #5/24
Accanilid 1/64
Shel - 6/32 Remains Gummy

Tetra-Chloro-Naphth- 1/4 #6/24
Mono-Chlor-Naphta 1/8 Too soft
Shel - 3/8
Try again with less Monochlor

Chloro-Naphtha 8 oz
Rosin 3/4 " #7/24
Acanilid 1/2 oz
Stearate Lead 1/8
Shellac 1/3 oz
Made Blanks. Dope was not liquid enough, made air holes

6-25-10

Alpha Naphthol 1/2 #1/26
Formaldehyde 1/2
Fusel Oil 1/4
Heated on steam table over night
Next day melted over flame until condensed. result. Hard brittle mass.

6-27-10

Chloro-Naptha 1/2 #2/27
Abietic acid 7/16
Makes Hard brittle compound, but not tough enough.

Chloro-Nap 1/4 #3/27
Mono-chlor-Naptha 9/16
Shel - 3/8 Brittle Mass

Chloro-Nap- 1/4
Mono-Chlor Naptha 1/16 #4/27
Accanilid 1/64
Shel - 1/2
Makes fair flexible Mass.
Try Again

Tetra Chloro-Naptha 3/8 #5-27
Mono-Chlor " 1/16
Ac Anilid 1/64
Shel - 1/2
Good flexible Mass. little soft

#5/23 - 1/8 oz
Shellac - 5/2 Bubbles, Too much Shellac -
Try again

6-27-10

Tried the New Semi-automatic Coating machine made according to sketches drawn since June which consist of a melting box having outlet opening near the bottom to feed the Compound upon the blank in a manner that the compound is applied in thin layers similar to winding a Roll of paper. When the blank tube is in position to take the compound it is made to revolve adjacent to the outlet of the melting box, which receedes from the blank gradually to a limit which is the proper Diameter of the blank. The paper tubes are carried upon removable mandrils having hole through them, these revolve upon a fixed shaft to a face plate. Each shaft is provided with a clutch arrangement so that when the mandrils is inserted the clutch take hold of the mandril to revolve them. The face plate is mounted upon the end of a revolving shaft also, in order that it may swing to and from the outlet of the melting box.

6-28-10

Chloro-Nap — 8 oz #1/28
Rosin 1 oz "
Acetanilide 1/2 "
Shellac — 1/3 oz Good Soap

Chloro-Nap — 8 oz 2/28
Mono-Chloro Nap 1/16 "
Acetanilide 1/16 "
Shell — 1/2 oz

Chloro-Nap — 8/32 #1/30 6-30-10
Rosin 1/32
Acetanilide 1/64
Shel 13/32
Boiled in Water, added 3 drops Caustic Potash
The mass combines after evaporation
of Water to a pretty good Compound
but still the grains are there

12/16 — 1/8 oz
Shellac 1/8 "
Too Plastic. Could stand more
shellac.

6-30-10

1/18 — 1/8 oz — # 3/30

Shel — 3/16

Makes nice Hard mass but bubbles add 1/2 of 64 alba napthol, that make a better solvent and produces tougher mass, but could not stop the bubbles.

2/18 — 1/8 oz — # 4/30

Shel — 3/16

Good Hard Compound

Try Again to make record by Solide Record process.

2/18 — 1/4

Alba Napthol 1/2 of 64

Shel — 1/8

Boiled for 3/4 hr. & Condensed

2/18 — 1/8 oz

shel — 3/32

Prolonged Heating will also Condense

EDIT A.M. JUL 1 1910.

Started experiment upon solid moulding of record with Hard Compound

Chloro-Nap — 6/8
Resin — 3/32
Aganalid — 3/64
Shel — 9/8

7-1/3

Make good mixture, Oxidalizes quick to hard mass. Tough enough and when liquid enough has very few bubbles. Will not free itself from Hot matrix. Will free itself from cold matrix, but the cold matrix chills the mixture so quick that it will not cover the indentations.

Chloro-Nap — 1 oz
Aganalid — 1/8 "
Shellac — 1/8 oz

7-1/4

Mix is good, at 210°F. it ~~evolves gas, but clears in 5 minutes~~.

~~Fitted a record matrix —~~

Entd P.M. JUL 1 1910

copper shell upon a phonograph mandrel. Poured the mixture, and cooled into cold water solution 40°. after standing there 20 minutes the record could not be extracted. To prove the quality of record surface I opened the matrix with saw, pulled out some pieces, found that the compound did adhere to the matrix surface so much that this method is impossible with this particular mixture.

Dope # 7/5 10.

Chloro - Naph - 2 oz
Acetanilid 3/16 "
Shel - 3 "

Entd A.M. JUL 5 1910

Made solid blank with taper bore and mould record before the blank was cooled off, then chilled into ice water. in about ½ minute the record contracted enough to drop out of the matrix. the record was imperfect due to the blank surface being imperfect.
To prevent the blank adhearing to the mould for making blank it must be made warm enough to melt ceraine and wipe off the excess - the Dope will not stick to metal as treated.
Repeated same method expt that I made the Blank mould. Hotter and it did stick to; that is due to the ceraine being washed away by the flame of the Dope.

Solid Blank Weight, 3⅞ oz.

Dope # 7/10.

Made Blanks upon Seeley's Spiral tube, the inner-tube with Dope 1/16" thick, by the revolving method. there was no more bubbles upon such tube than upon the V.E. #616 paper. the increase of thickness of Dope upon the paper tube is an improvement in the way that the paper does not show its changes through the dope as it does with blank coated with .012" to .015" thick. the blank coated 1/16" thick will roll to produce a more even and smooth blank than with thinner coatings. But after pressing the Record it cannot be extracted from the matrix. the inner tube paper is so soft that it has no elastic quality to draw back after pressed outward and the 1/16" thick Dope has not enough contraction force to overcome the strength of the paper tube.

Made Records with Dope # 7/10. by the dipping process, the mould is simply the regular Matrix set into a tin Can about 1/4" larger than the O.D. of the matrix, it sits upon a base fixed to the bottom of the Can. which is open to let the dope enters through the bottom. #1 Dipped Hot matrix about 200°F. into Dope 250°F. 3 min. then into cold Seawater. Records contracts out. Record were not perfect on surface. some spots of soft matter showing up.

#2 Dipped warm matrix about 170°F. Dope 250°F. 15 min. then in Cold Seawater did not let go the matrix.

#3 Dipped Hot matrix 4 min. & then in Sea Water just enough to chill dope. trimed off & put under 1800 lbs. pressure, then in Sea water. 5 min. it did contract out.

Record contained some surface imperfections

Entd P.M.
JUL 8 1910

Dope #7 7/5 '10.
Temp. 280°F. it boils at this temp. reduce temp. stir until bubbles are eliminated. Dip Hot matrix in and out about 8 times, then into Ice water. Contracted out. The record contained surface imperfections.

#2 Ex. # 7/15 '10 Dope
Temp. 250°F.
Dope was mix with about 20% of some old.
Dipped warm matrix 5 min, then in Ice water to chill enough to trim off. then put under pressure 1800 lb. 5 min. & then in Ice water 5 min. Comes out fine.
Surface imperfections due to mixture.

#3 Ex. 7/5 '10. Dope added more of old. Raised temp to 280° reduce temp. 270° Dip. 5 min. Chill to trim + press 1800 lb. 5 min. then in Ice water, would not come out before 1 hour, that is due to the addition of old dope which was partially condemned, which retards crystallization

#4 Ex. Dep. 7/5 '10 Dope same as #3 Ex. Contained more bubbles. Dipped warm matrix 5 min then in Ice water. Came out after 1 hour. Records looks good but surface is not frictionless.

(# 7/9 #1)

Dope # 7/5 '10.

Rec'd A.M. JUL 9 1910

Coated blank upon tubes. 10½ layers V.E. paper treated with Monochloro-naphthalene at 225° F. dipped into for 1 minute and let stand in the oven for 2 days.

Diameter 2.139" Blank Plain
2.179" " Coated

Thickness of Coating .0315"

The coating worked very well except that the mixture was not compact, some waxy matter did separate, which caused a rough surface.

(# 7/11 '10)

Rec'd A.M. JUL 11 1910

Moulded records with the Blank # 7/5 #1. 1800 lbs pressure 5 minutes.

Result: N.G. the blank was too warm, causing the Dope to stick on the matrix.

The Dope # 7/5 '10. is not permanent after 24 hrs. of fusion heat. Very 90° to 95° the record becomes flattened and distorted due to the Dope displacement.

The Dope should be of such consistency that it will stand 95° heat without being affected.

Entd A.M.
JUL 12 1910

#1

Chloro-Nap 1/4
Alpha Napthol 1/32
Acanilide 1/64
Shel 7/16

Chloro & Alpha Melt & Raise Temp to 300°F then add Shellac about 1/4 the quantity melt & add Acanilide and heat to the temp near above 300°

Result. The Mass is too Plastic.

#2

The addition of Carbon Tetrachloride to the above produces a more plastic mass

#3

Alpha Napthol 1/16
Tetrachloride Carbon 1/4
Shel 1/4

Result. does not Gelatinize. Too Soft

#4

Chloro-Nap. 1/4
Alpha Napthol 1/32
Shellac 7/16-1/16 Temp 280°

does not Bubble Looks Good.

Try Again

#5.

Same as #4 with addition of #16 aniline oil

Alpha Napthol 1/32
Eclarite 3/32
Water Glass

#7

Chloro-Nap- 1/4
Amyl Acetate 1/32
Shel 7/16

Bubbles

#7A

Same as above with the addition of Arrow-Root which has been dried over steam table about 48 hrs. this makes a more permanent mass of Dough but the machine is too coarse

#9

Chloro-Nap 1/4
Monochlorinaphthalene 1/16
Alpha Napthol 1/32
Shelac 7/8

Result. Too Plastic. Soft

#10

Chloro-Nap 1/2
Monochlorinaphthalene 1/32
Alpha Napthol 1/32
Shelac 1/4 Temp 280°

Too Soft. Plastic.

Made preparations to wind paper tubes with only 10½ layers of paper the glue is Gum Arabic in water added little fusil oil to prevent drying so quick and also to preserve the glue in liquid state.

The solid blanks made on the 8th & 9th inst. were left to stand in the open two warm days Temp. 95 to 98 the blanks collapsed due to heat softening the Stape.

Diameter of paper tubes of 10½ layers after 5 days air drying measures 2.128" O.D.

Other finish from Rolls.

Ent'd A.M. JUL 13 1910

#7/14 '10.

Blank tubes of V.E. #616 paper 10½ layers. Arabic Glue with about ½ oz. of fusil oil to the gal. of glue solution. These Blank Tubes will be Numbered #7/14 '10.

The lot that is treated with glycerine will be called 7/14 A. 10, this treatment is simply wiping the blank with a cloth permeated with glye.

Ent'd A.M. JUL 14 1910

ORDNANCE
Ent'd
JUL 15 1910
A.M.

7/14 - 10 Tubes
treated by dipping in Glycerine warmed to 150° F. This operation is intended to expel the excess of water and so fair the paper tubes
This lot will be numbered
7/15 - 10A

Dipped into monochlornaphthalene at 300° F. about 10 seconds if the dip is longer the tubes will blister.
this lot will be numbered # 7/15 B - 10

Dipped into Boiling Carbontrachloride 1 minute. this looks like a good method and cheap.
This lot will be numbered 7/15 - C - 10

Guaiacol 3/16 oz
Shel — 7/16 "
N. B. When quantity sufficient to dope liquid enough the mass is too soft.

Beta Napthol 1/16 # 1/15 10
Shellac 1/4
looks Good -

Beta Napthol 1/16 # 2/15 - 10
Shel — 3/16
Too soft

Napthylamine 1/16 - 1/32 # 3/15
Shel 3/16 - 1/16
Remains soft probably due to the Alcohol

Ortotoluo-sulphamide 1/16 # 4/15
Shel — 3/16
Good Hard mass, but turns out too brittle. Bubbles at first but clears after.

Chloro-Nap- 1/4 #7/16 #1
Napthal (Beta) (subli) 1/16
Mixes good, remains too soft

Hexitrobenzene 1/16
Shel - 5/32 - 1/16
Bubbles, add little Naphthylamine - remains too soft

#7/16 #1 Solv. 1/8 oz #7/16 #6
Shel - 3/16 oz

Hard Chloro-Nap - 1/4
Napthal (Beta) (subli) 1/8
Shel - 5/16
Precipitated Alumina 1/16

Nitroaniline 1/32
Shel - 3/32
Beta Napthal (subli) 1/64

Nitronaphthalene 1/16
Shellac 3/32

Acetanilide 1 Part
Shellac 3/4 "
Makes Hard Mass but not tough.

Same as above with addition of shellac prevents it from crystalizing

Chloro-Napth. 8 oz #7/8-10 Blanks
Acetanilide 1/2 oz
Rosin 1 oz
Shel - 13 oz
Made Blanks all of which were coated without Bubbles or air holes but the surface was not smooth, the Dope upon cooling contracts irregularly. The Dope remains liquid a sufficient time to be practical. Does not Bubble when temperature remains at 250° or lower try again

Records #7/8-10
Moulded 6 Records of the above blanks, All of them pressed good & Extracted easily. Some surface imperfections with all of them

Entd A.M.
JUL 19 1910
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Moulded marine ~~more~~
Records of the #7 & 10 Blanks
Heat the blank over steam
tubes or in water it flows
on the surface then Roll into
Polishing Rolls then heat again
to make plastic & Mould Record
This is numbered #7 & #10 #1

Sulfo Chloro-Naphthal	8 oz	#7 & 10
Acaniid	1/2 oz	
Pine Rosin	1 oz	
Shellac	14 oz	

Melt Chloro-Nap. & Rosin up to 270° F. add the Acaniid stir well and add about 1/2 the quantity of Shellac stir until dissolved add the balance of shellac little stirring well temp. must not rise over 270°. Filter through 160 mesh screen in Vacuum

Coated 21 Blanks of 10 1/2 layers #V.E. 616 paper. These were left exposed to air for 24 hrs. then placed in oven heated 220° F. for 1 hr. then dipped into mixture of Carbon tetrachloride 8 parts & Monochlornaphthalene 2 parts at boiling temperature 180° for 1/2 minutes, this has for object to expel moisture and free the paper from oil spots.

The coating is produced on special device which spreads or lays the compound in thin layers similar to coating paper. Cold air blast is provided to chill each layer, this method provides a more compact coating than when coated full thickness at fixed distance, as soon as the last layer is applied the blank is rolled between polishing rollers moderately hot about 150° F. the blank is produced to measure at

Entd A.M. JUL 19 1910

at the title End 2.168"
at the center 2.174
at the other End 2.173
The thickness of paper tube is .029" the thickness of coating material is .030"

Applying great pressure upon the coated blank to polish will loosen the coating from the paper tube.
Rolling it a long time has the same effect!
Rolling it when the coating material is cold will crack the coating.

Blanks that are imperfect on the surface may be reheated to render plastic and repolished between the Rolls.

There is 6 3/8 oz of coating material to 10 tubes.
Approximately 4 lbs to 100 tubes at 20 Cents per lb. makes $\frac{8}{10}$ ¢ per tube

Records # $\frac{7}{20}$ '10.

Entd A.M. JUL 20 1910

Moulding # $\frac{7}{19}$ '10. Blanks.
The matrix must be made warm, not Hot. say about 150°F. The Blank about the same temperature.
500 or 600 lbs pressure is first applied for about 1 minute and then increased to 1200. the matrix should be allowed to cool under pressure, if taken out when still warm the record surface assumes a rough surface after a time.
This lot of Records will be numbered # $\frac{7}{20}$ '10

Out of 21 Blanks all good to eye inspection 8 perfect Records resulted.
One — with 4 air spots
Three — " Pin holes
One — " 1 air spot + 1 Blister
Seven " Blisters
The Blistering seems to be due to a gas pressure escaping from the paper or they are spots where cementation was not effected.

Blanks # 7/21/10

Letter

Chlora-Nap 8 oz
Rain 1 oz
Melt & Raise Temp to 270° F.
Add —
Acetanilid 1/2 oz & stir
add - Shellac 14 oz little by little
and stir Rapidly let temp.
Raise to 270° F. & filter
through 160 mesh wire cloth.
The filter apparatus is specially
made, which consist of two
Vessels between which is placed
the screen, the compound
is melted into the first vessel
the screen is placed upon
the rim & the second vessel
is placed upsidedown upon
the rim of the first vessel.
the second vessel is provided
with a pipe from the side
near the top, this is connected
to a Vacuum manifold. the
two Vessels are clamped together
& turned bodily over. the Vacuum
draws the Compound right through
the screen almost instantly.

Entd A.M
JUL 21 1910

The filtered compound was
next placed into the melting
Vessel of the Coating device, which
is provided with a stirrer made
like a propeller operating
Vertically, the blades almost
touching the bottom.
Coated 12 Blanks 4 of the tubes
were blistered, that is, the paper
was not properly cemented at
various spots, these were
marked on the inner side
of the tubes, after the tubes were
coated the blistered spots did
all show up, thus demonstrating
that the paper tube must be
made compact, every layer must
be absolutely cemented.
Aside from these blisters, all
the tubes were properly coated
to mould good Records.
The method of Coating was the
winding of the compound in layers
same as winding paper.

Entd A.M
JUL 22 1910

#7/22 10

Moulded Records of Blanks #7/21'10. Six of them all good.
The Method Employed is as follows.. the Matrix is made warm Temp. 115°F. the Blank about the same or little lower, about 105°F. placed the matrix provided with the blank under 600 lb pressure for 1 minute Increased pressure to 1200 for another minute then turned on Cold air onto the matrix to cool same under pressure for 3 minutes, the Records Comes out chilled + clean, under no difficulty whatever. These Records are Numbered 7/22 10
Have noticed that the blanks after 12 hours standing had lost their gloss the extreme surface had become Matt. similar to ground-glass. the pressing of the Record brings on the gloss again

Entd A.M
JUL 23 1910

#7/23'10.

Made 60 paper tubes of 10½ layers V.E 616 paper with Arabic glue having a trace of fusiol to preserve it and to retard hardening.
made these tubes as good and with as much edge as possible, the winding mandrel in this trial running 144 Revolutions per minute giving more time for the glue to permeate the paper.
These tubes will be numbered #7/23'10

Inspected some #7/22 11 Records noticed slight change of surface.

Entd A.M. JUL 25 1910

Inspected some # 7/20.10. Records the surface has altered from a glossy to a wavy – much like a shrinkage of the Compound Reproducing on the Phono. a grating sound issues much more prominent than when they were made.

Inspected the # 7/22 Record. they also have assumed a rough surface same as the # 7/20.10

Treated some # 7/23.10. tubes by boiling in Strachlor-Carbon for about 5 minutes after drying in oven for 1 hour. These tubes will be numbered # 7/23.10.A

Chloro-Nap 7 oz
Rosin 7/8 oz
Acanthid 7/16 oz
Shel – 1/2 oz

7/25.10.

Entd P.M. JUL 25 1910

Melted Chloro-Nap + Rosin temp 270° F. added Acanthid. Stir. + add shellac little by little. stir well Don't let temp rise more than 270° Filter through 160 mesh wire cloth in Vacuum Varnish.
Coated 10 tubes # 7/23 10 A. then added some Utah Gilsonite and coated 5 more tubes. The last one turned out imperfect due to the dope being Condensed there 5 blanks appear to be of better quality than those without the addition of Gilsonite
The last 5 blanks will be numbered 7/23 10 B.

Pressing 7/20 10 B Blanks

Matrix is heated to 120° F. so is the Blank. Pressed at 500 to 600 lbs for 1 minute then increase to 1200 lbs for another minute then turn on Cold Air from Elec. Fan. in 3 more minutes the matrix is cool enough to take out Record. The Records were very smooth, as smooth as wax. and of good Reproducing quality.

These will be Numbered # 7/26 10 B

Pressed # 7/23 10 A Blanks all the tubs were perfect so far as Eye inspection, but after the Cooling of them 4 showed blisters, the surface quality was little more harsh than the # 7/26 10 A.

Made 6 Blank with # 7/25-10 Dope these will be numbered B 7/26 10

Inspected # 7/26 10 B Records the surface shows some change, these were very smooth on the day made, there seems to be two reasons for the changing, one is that some particles of the Compound swell up & the other above the particles contracts, the defects are visible to the Eye.

Inspected # 7/26 10 A lot of 7 Records 4 of them the Blanks did show blisters & lap seams, one the last layer of the paper was not properly cemented in one spot near the tube end. All of these imperfections reappeared on the surface of the Record after 12 hrs standing.

Rain 1/2
Alpha Napthal 1/2
Talk 3/4 oz
Shel 2 oz

Ent'd A.M.
JUL 27 1910

Melted Rosin in Coating — Machine Melting Pot added — Alpha-Napthal. After the Talk let Auto-Mixer work about 5 minutes then add shellac in small quantities 1/2 oz, Coated blank this will be numbered B 2/7 10

Added 1/2 oz more of Shellac and Coated another tube, this will be numbered B 2/7 10 A

Moulded # B 2/7 10 A the Result is fair, the Blank was not free from imperfections it contained many air Bubbles, which did show up after the Record was moulded, the surface is little Rough

Chloro-Nap- 1/8
Rosin or Resin, above 1/64
Partially Dissolves -

Ent'd A.M.
JUL 28 1910

Gum Amalgum & Chloro-Nap - does mix to a clear liquid

Spruce Gum & Chloro-Nap mixes well, few bubbles, clears after cooled

Amine Copal, requires only very little alpha Napthal to clear

Gum Aluminum & alpha Napthal equal parts dissolves to produce sticky mass, shellac hardens it

Ent'd A.M. JUL 28 1910

Chlor-Nap 1/16 #28/18
Alpha Naphthol 3/32
Amalgum 3/16
Shel — 1/2
Boils at 300° F.
Produces Hard Mass, but little brittle
fluid enough to filter.

Chlor-Nap 1/16
Alpha Naphthol 3/32 #28/19
Benzoin alcos 3/16
Shel — 1/2
Temp 310° F. let boil for little while
produces Good Hard Mass, but
little brittle Try Again

Ent'd A.M. JUL 29 1910

Chlor-Nap. 1/16
Accanilid 3/32 #29/1
Benzoin alcos 3/16
Shel — 1/2
Raise Temp, to 400° F. and stir all the
time, it Bubbles much, let temp
drop to 300° add 1/4 more accanilid,
this turns the mass to thicken much
and looks like condensing add
1/8 more Alcos and Boile temp to
320°. it again becomes fluid
enough to filter.
Result, the Mass does not
Harden.

Accanilid 3/8
Benzoin Alcos 3/16
Shel — 1/2 oz
Temp 330° then lower to 320°
when it clears. When cool makes
pretty compact mass but not tough
enough. and contains considerable
air bubbles.

Chloro-Nap 1/4
Acaniliid 1/64 #29/4
Bonain Aloes 1/32
Shel- 3/8
Very liquid
not enough shell, Way expensive

Entd A.M.
JUL 29 1910

Chloro-Nap 1/4
Acaniliid 1/64 #29/6
Alpha Naphthol 1/64
Bonain Aloes 1/32
Shel - 7/16
Very liquid. the Naphthol seems to produce better mixture of the Chloro-Nap - with the shel - than the acaniliid

---

Chloro-Nap 1/4
Acaniliid 1/32
Bonain Aloes 1/16
Shel 1/2
Boil for about 25 minutes and it condenses

Paul's Resin 1/16 #30/1
Acaniliid 3/32
Shel 3/32

Entd A.M.
JUL 30 1910

Paul's Resin 1/16
Aloes 1/64
Alpha Naphthol 1/64 Neg.

Chloro-Nap- 1/4
Acaniliid 1/64
Paul's Resin 1/32 #30/√
Shel- 3/8
Coagulated

Chloro-Nap- 1/8
Alpha Naphthol 3/32
Bonain Aloes 1/8
Shel 1/2
Bubbles little - Temp. 270° F. to filter. Fair mass but plenty of Bubbles.

Solid Compound Blanks

#8-10#1

Made 7 Blank of #8-10 Compound, this lot was made by coating directly upon the metal mandrel and not upon the paper tube, the Experiment is to prove whether the paper tube is the cause of the surface alteration of the Record

These were moulded same as those with paper foundation with exception that 1060 lbs pressure was the maximum, starting with 700 lb for 1 minute & then 1000 for 8 or 10 minutes then chill the matrix & Record in Ice water in about 2 to 4 minutes the Record drops out, Some matrices are larger internal Diameter near the Little End, from such matrices the Record will not come out.

Made 4 Blanks upon paper and with #8-10 Dope to which was added as much Arrow-Root (Prepared Burnt) as the dope would allow, these will be numbered #8-10 #2 Records pressed same day & will bear the name Recorder

Formaldehyde 1/2
Bonair Alcohol 1/2
Put in flask on Steam table. melt at low temp. it Bubbles much. the resulting mass is hard but too brittle to be of use. added some Chloro-Naphthalene which reduced the brittleness. the mass is now no better quality than when no formaldehyde is added

Chloro-Nap- 7/8
Alpha Napthal 3/32
Bonair Alcohol 1/8
Gum Alumina 1/16
Shel- 1/8. Melt and Raise temp to 330°F. then reduce temp to 210° and add 1/4 more Shell. this mass is fair quality but Condenses over steam table in 1 hr.

Chloro-Nap- 3/16
Alpha Napthal 1/16
Gum Alumina 1/16
Shell. 1/8 Melt & Raise temp to 400°F and add 3/8 of Mass of Shell & Reduce temp to 260°, Good Tough Mass but full of Bubbles. [65]

#8-2-10
1

Chloro-Nap. 3/16
Gum Acaroidia 1/8
Alpha Napthol 1/16
Shel. 1/8 Melt & Raise temp. to 400°F. add 3/8 mm of Shell. & let temp reduce to 260°F. Result, the mass is similar to # 8-2-10 but more brittle. Contains Bubbles –

Rec'd AUG 2 1910 A.M.

8-4-10
1

Chloro-Nap. 1/4
alpha Napthol 1/32
Resorcine 1/32
Shel 7/16 – 1/8 mm

Rec'd AUG 4 1910 A.M.

8-4-10
2

Chloro-Nap. 1/4
Resorcinol 1/32
Acaroidic 1/32
Shel 7/16
Sandarac 1/8 Melt and kept at 250° for 1 hr. Make total mass but Bubbles much & little too brittle

8-4-10
3

Acaroidic 1/16
Resorcinol 1/16
Shel 1/8 – 1/8 – 1/8 – 1/8
Boiled for about 3 minutes

8-4-10
4

Acaroidic 3/16
Acid Silicic 1/16
Shel – 1/8 – 3/16 – 1/16 – 1/16 – 1/16 – 1/16
Chloro-Nap – 1/8

#8-4-10
J

Accaulite 1/32
Resorine 1/16-1/16
Shell - 1/2
Sam Elimi 1/32

Hard tough Mass. Bubbles

Chloro-Naps 1/4 #8-4-10
Accaulid 1/16 6
Silicate Aluminum 1/8. Melt at 300°F.
Shell - 1/16
This Mass does not Bubble and is fluid enough to filter After Cooled the Surface was very little Mat and only few pin-holes. But little too soft try Again with less anilide

Mr Edison gave me some pieces of composition which he said came from Elsworth the pieces were Rolled about 3/32" thick & 3/2 wide and curled to form cylinders but not welded together. with instructions to mould the samples in cylindrical Matrix. Heated Matrix Over

- Steam-table temp 240° and heated composition in oven over steam table about 225°. Put under 1000 lbs pressure for about 10 minutes and cooled with Electric fan. The Record would not extract. even with cold air application. Put into Ice-water for about 10 minutes and was able to force it out the Record was not compact in spots and was good in part.

Rec'd A.M. AUG 5 1910

#8-5-10
1

Alpha Napthol 1/16
Stove Clay enough to
make thick paste
& add shellac

Chloro-Nap- 1/8 #8-5-10
Amlide 1/64 2
Alpha Napthol 1/64
Stove Clay 3/16
Shel - 1/8
After 1 hr. setting was little
softer, but tough.

Chloro Nap 1/8
Elemi 1/8 Gummy mass

Chloro-Nap 1/8
Elemi 3/16 More gummy

Chloro-Nap- 1/16
Elemi 3/16 Gummy

Elemi & Alpha Napthol
Produces a sticky mass

Rec'd A.M. AUG 5 1910

Elemi 1/32
Locus 1/32
Amlid 1/64
Shel 1/16

Elemi 1/16
Locus 1/32
Amlid 1/32
then melt and raise temp to 380°F
and add shell 1/16 & keep down
add amlid 1/32 more
fuse at 240° for 1 hr. would not
fuse itself from Bubbles
add ~~Zinc~~ aluminum 1/32
that made it Bubble more N.G.

Elemi

Elemi 1/8
Shellac 1/8 3/16 – 80 mesh
Asbestos
Temp 250°

Elemi 1/8
Shellac 1/8 3/16 Coarse
Asbestos
Temp – 250°

Shell 1/8 1/32
Elemi
Asbestos 3/32 – 80 mesh
Very Hard & tough

~~Shell – Elemi~~

Elemi 1 1/2
Shel 5
Asbestos 4
~~Attab~~ Gelsonite 1/2
Melt Elemi add Gelsonite and stir well
add asbestos stir well
Condensed. probably due to the
Gelsonite try again without

Elemi 1/16
Camelia 1/64
Shiley Mass

Elemi 1/16
Sandarac 1/16
Toughens the Elemi
add about 1/32 Chero Nap.
Produced clearer mass but no
tenacity, add asbestos to thicken
made tough hard mass
Slightly sticky.

Manchlora – 1/16
Shel – 1/4 fairly Hard

Manchlora 1/16
Naphthyamine 1/16
Shell 3/8 add 1/64 Gall ox
Remains liquid 2 hrs. Don't seem to improve
and produces a pretty tough
mass but all bubbles are
not eliminated Very Hard
try again

Ent'd P.M.
AUG 8 1910

Acanthid 1/4 #8-8-10
Chloro-nap- 1/8 3
Shel - 3/8-1/8-1/8-1/8
Temp. 240°
~~Soft chem. cycle~~
Colored a sample left #26 Ambrina

Chloro- 1/8 #8-8-10
Acanthid 1/4-1/32 4
Shel - 1/8-1/32-1/32
Asbestos 3/32-1/32

Alpha Naphthol 1/64
Acanthid 1/8
Shell - 3/64
Asbestos 1/16 n. g.

Acanthid 1/8 #8-8-10
Shel - 3/32 5
Asbestos about 1/16

Acanthid 1/8 #8-8-10
Shell 1/8 6
Asbestos fine 3/16
Looks Very Good
Slow Hardening

Acanthid 1/8
Shel - 1/8
Asbestos 1/8 #8-8-10
Slow Hardening 7

Ent'd P.M.
AUG 9 1910

Acanthid 1/8
Shel - 1/8
Asbestos 3/16
flock (Black) 3/64

~~#8-9-10~~ 1
Acanthid 1/8-1/32-1/32-1/32
Nonchlore 1/32
Shel 3/16 Soft

8-9-10
Acanthid 1/8 2
Elmin 1/32
Shel 1/16
Gray flock 1/16

Acanthid 1/8 8-9-10
Chloro-Nap- 1/16 3
Shel 3/16 Hard. Tough. But
B. flock 1/16 wrapey on surface
asbestos 1/16 enough to flatten-round

Entd P.M. AUG 9 1910

Elemi 1/16 #8-9-10 / 4
~~Alpha Naphthol~~ 1/32
Shell – 3/16
Flock – 1/32
Asbestos 1/32

Rosin 1/8 8-9-10 / 5
Asbestos 3/16

7½# Copal 1/8
Asbestos 1/16

Sulphur 1/8
7½# Copal 1/8

7½# Copal 1/8
~~Shell 1/16~~
Alpha Naphthol 1/64 – 1/64 Raise temp to 475° then lower gradually

---

Accamulide 1/8
~~Asbestos~~ 1/16
~~Shell~~ – 1/8 Use thick

Accamulid 1/8
Asbestos 3/64 #8-9-10 / 6
Shel 3/32
Not very fluid

Accamulid Heated at 540°F. temp for 4 hr. it assumes a dark brown color almost black + forms a brittle cristaline mass – #8-11-10 / 0

Entd AUG 9 1910

Accamulid 1/8 #8-11-10 / 1
~~Asbestos~~ 1/16
Shell 3/32

Accamulid 1/8 #8-11-10 / 2
~~Asbestos~~ 3/64
Shell – 3/32

Accamulid 1/8 #8-11-10 / 3
Asbestos 3/64
Shell – 1/64

EDISON 4 AUG 11 1910 PM

#8-11-10 — 1/8 - 1/64
0

#8-11-10
4

Asbestos 3/64
Shell - 7/64
Good Tough Mass, little difficulty to work.

Mr Edison Made Compound of Resin (Special) with fine asbestos Powder — Coated 4 Blanks Moulded 2 Records, they are Numbered # 8-11-10 / 5 The Yellow colored record did not reproduce Smooth enough to be commercial the darker shade is due to heating the blank over steam table oven for 1½hr. it does not reproduce quite as smooth.

Dolley's Dope # 321
Coated several blanks when temp was 240° to 260° but the compound was not homogenous, it did seperate immediatly upon cooling, but when the temp was reduced to 300° F and kept there for 1½ hr. The mixture became more compact and coated 2 blanks, and moulded the records, The Pink colored was the smoothest enough to be Commercial, the darker shade was due to heating longer in oven prior to moulding record. there are Numbered # 8-11-10 / 6

the next morning the above dope was reheated and about 1/2 of Common Yellow soap was added The mixture immediatly commenced to bubble, after about 3/4 hr. with stirring all the time the mixture did clear enough to coat 4 blanks and moulded 3 records, one of them Marked # 8-11-10 / 6A was the smoothest, in fact smoother than the wax records. # 8-11-10 / 6B was not quite as smooth due to the blank surface before moulding Record.

Rec'd P.M. AUG 12 1910

Dalley's Dope # 336
made in melting hop —
no Gettering made up
of Extra Chlor Naphthalene
Zinc Stearate
Diphenylin
Shellac.

Melted the three first ingredient at 300° F. and added the shellac little by little, the mixture was very liquid but full of Bubbles. After over having the Bubbles were nearly eliminated coated 6 Blanks, the process is slower than most other mixtures because it does not set as quick will mould the records to-morrow these will be numbered
8-12-10
1

Record moulds good and is very smooth. But soft.

Rec'd P.M. AUG 12 1910

Dope # 321 made by Mr. Edison. Melted with 300° F. temp. after being liquid ten minutes and stirred well Coated first blank. it had a tendency to seperate. after 20 minutes the mixture was more compact. there was no bubbles. at the end of 40 minutes the mixture was still good for Coating, but not sufficient quantity to coat more. Let stand till morning. these will be numbered
8-12-10
2

Moulded Records, three Blanks that showed a mixed color were not as smooth as the one that was a solid color. But the pressure forces to the surface a waxy matter that accumulates in spots upon the matrix which is imprisoned and little or great pressure will not make good.

Rec'd P.M. AUG 13 1910

Dalley's Dope #345
Tubes that have been shipped
off to coat over again.
Coated 10 Blanks, the dope
was not filtered, was made
by Peters in Chem. Lab. Melted in
coating machine at 270°F. Liquid
enough. The Particles of impurities it
contained caused little trouble in getting
smooth surface, but the Polishing
Rolls worked out most roughness.
When Cool. Polished the Blanks on
Phono-Cycly-High Speed with sand paper
and burnished with paper & moulded
the Records. Will number them # 8-15-10

Made one Record of Dalley's Dope #321
Made by Peters, the dope did not seem
to mix well in coating machine. had
some trouble in moulding one blank
that was good enough to mould Record
this Record will be numbered # 8-15-10
1 A

[132]

Dalley's Dope #359
Mixed in Chem. Lab. turned
into coating machine. Tried to
coat tubes at 240°F was too
viscous. Raised temp to 280°F
270°F. Became liquid enough to coat.
made 10 blanks. The coating Roller
Revolved too quick. Not long enough
8-16-10

Jan. 4th 1912 - Inspected Record was very Rough

Paul's Dope 8-16-10
10 gr. Pb. Cl
5 gr Resin (Elmworth)
1 gr Acambide

Melted, at 300°F was little too thick
coated one tube & moulded Record.
Found the dope to have the quality of
melting very quickly, quickly hardening
to polish (Between Rolls & Roller thing
is Hot. say 300°) The Consistency quality
of this dope is strong, very good
the blank was quite smooth, but having
many depressions and not filled in. I
the finishing by the Record filled all. Was smooth enough.

Moulded Dalley's Dope #345
Blanks made on the 15th
there will be numbered #8-15-10
one of these was moulded — 15
— with only 600 lbs pressure will
be numbered #8-15-10
was Comm. Smooth I. C. But have
spots that did not press out.

Moulded Blanks 8-16-10 the Records
will be called number 8-16-10
2-A

5 Chlor-Prop
½ gl. Ether or Benzole
15 gl. Acetone

Dalley's Dope #365

Made 15 blanks, were the
finest looking blanks up to date
temp. 305°F sets quick enough, the
Polishing Rolls must be about 200°
Hot and the blank should be
taken from the coating machine
in quick order, it must not be
chilled enough to prevent cementation
when the dope is pressed together on the
Surface. These blanks will be called
#8-17-10

Mould one Record, will be st #8-17-10

Moulded Blanks #8-17-10
and will be Numbered

Date PM 8-18-10

AUG 18 1910

Pressure to begin 600 for 1 minute
& then 1200 lb until cool, the
blank must be heated only enough
to render slightly plastic, the matrix
only about 150°F.

Dally's Dope # 368
Blanks made 1 #8-18-10
2

Date PM Dope works little viscous
AUG 18 1910 and Bubbles. Works better
with cold air blast and very Hot
Rolls for polishing. Hardens quick
enough and is very Tough, has
good cementation quality.
Pressed Records, the Blanks
requires little higher heating as does
the Matrix. Will be Numbered 8-18-10
2

Edison Dope of Ironschloroxyphalene soce
& Shell 310g. Works well Liquid
enough & Polishes well between the
hot Rolls, Contains impurities, The
Blanks will be No # 8-18-10
Moulded one Record 3.
will number # 8-18-10
3-A

Entd AUG 19 1910

Edison Dope # 371 will be
Numbered 8-19-10
Made 12 Blanks ~~1 works~~
well at 290°. few bubbles.
Moulded 3 Records will
bear the same number. one
was smooth as wax. the other two
were rough blemishes and they blistered
after about 10 hrs.

Entd AUG 20 1910

Moulded Blanks # 8-19-10
will be No # 8-20-10
Wound 115 tubes of V. E 616 paper
10½" layers. left to dry in the oven.
These will be numbered # 8-20-10

See next Book

Ent'd
AUG 22 1910

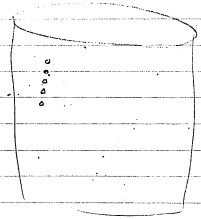
Stearic Acid 10 Parts
Caustic Soda Solution
mixed to Bleach Paper Pulp 1/4"
made a Sample of wax that
Had the greatest contraction of
any Sample tryed yet
look into again

[ITEM FOUND IN BOOK]

1 to 2 of shellac
This flows, if you
want it thicker
put more Lac in —.

Lampblack can go
in if ground with
the yellow wax to
get lumps out.

Edison Jan 31st 1910



Jan. 31st 1910
Edison Sketch of paper
tube perforated throughout.
The object is to prevent the
cracking of the coating material
when subjected to extreme low
temperature. It is thought that the
coating material will permeate through the
perforations and fasten itself thereto.

[ITEM FOUND IN BOOK]

Feby 11 1910

Pettit =

Have you tried that Experiment of a paper cylinder with holes in it to clinch the stuff = also How does the new stuff work =

Is it possible to remove returned records without taking Ends out = Drop me a line through Harry Miller & Keep me posted as to your progress

Edison

[ITEM FOUND IN BOOK]

[ON BACK OF PRECEDING PAGE]

Fort Meyers
Florida

[ITEM FOUND IN BOOK]

Feb 18th/10

Mr Thomas A Edison

Petit Oven

Dear Sir, -

To day I expected to find you good samples Records of the "new Stuff" but at this moment I have none that would please you, My trouble is particularly in not being able to render the mixture liquid enough. I have a tendency to believe that I will not succeed without the admixture of another ingredient to promote the fluidity. It is worth while looking for because this "new Stuff" has a much smoother

[ITEM FOUND IN BOOK]

[ON BACK OF PRECEDING PAGE]

Aylsworth uses 2 of
shellac to one of the wax
& it flows OK for the spinning
process, he however makes it
a little more fluid by adding
to 1 part of the wax — 1
1/10th part about of
a Chlorosolvent Naphtha —
Ask Greenly to give you
some of it you can make
it plenty fluid enough —
Aylsworth 2 shellac to 1 of wax
gives a much harder surface
than with lac & Naphthalene —

The experiment with the paper
shell showed work with thinner
stuff — you should heat the paper
+ mandrel — Aylsworth has to
to prevent congealing. Edison

March 7 1910

Petit

Aylsworth uses 1 of Tetrachloromethane to 2 of shellac & adds to this a percent of the Chlorinated Solvent Naphtha to make it more fluid — did you try this — There is something that comes to surface in time in many of these Compounds but I have never found that you could detect any scratch from them in the phonograph =

I suggest two lines of Experiment. One a pan which has the minimum of stuff & this is used up very quickly the stuff new into it from a Continuous melter

Petit 2

This could be made to hold only 10 or 15 minutes supply & the liquid could not condense in this time previously mixed stuff which has to be formed & melted Could be fed into a small dec melting pot & made to continuously supply the dipping pan by adding stuff to the melting pot =

2nd Suggestion is that the paper Cylinder be previously dipped in some thin less melting point material not volatile like Rosin that would penetrate the paper remove air water & decompose any impurity of speck of dirt that the heat causes to decompose & give off gas & then dip the paper so prepared in the Regular stuff of course it should be of such a nature that the

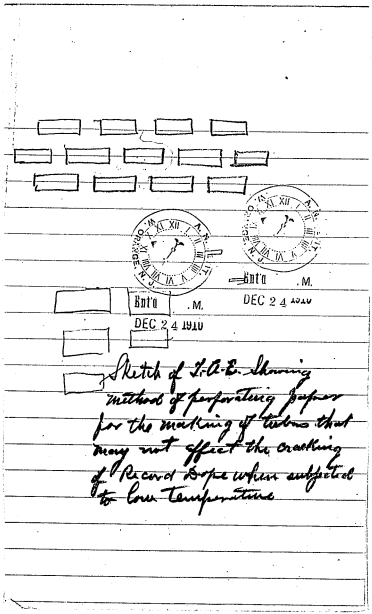
[ITEM FOUND IN BOOK]

3 Petit

Regardless will stick to it well
Try the Chloroform & Naphthalene alone
or the Tolucol Etc, Resin & metallic
paper Zinc -

Edison

[ITEM FOUND IN BOOK]



[ITEM FOUND IN BOOK]

Pelit

How does the new way I gave you work with the vacuo —

When you get some records made from it send me 2 or 3.

Edison

Pelit =

I have told Lancaster to go ahead & make a large lot of the Chromated Tolual —

It's already patented —

E

The change in time of the surfaces ~~to~~ (is) Color & even Crystal showing don't seem to affect the reproduction with these vac compounds

I have a record here made by Jw day lamp which has turned green & literally covered with crystals under vacuo yet it is clear & free as ever —

E

[ITEM FOUND IN BOOK]

Petit

My Experiment of pouring out on thin warm metal some of the shellac Compound to produce a sheet 1/16 thick so you can bend round to form a record & then mould it see if seam hurts

[ITEM FOUND IN BOOK]

Petit =

Did you ever try the Experiment of dipping then putting in a smooth ~~[illegible]~~ Mould + pressing hot then reheating + pressing in a record = I think Al Wirth or Aylsworth has a smooth Mould you can borrow —

2nd Idea = flowing the Melted Material out on flat sheet width of record + many feet long. then delaching while plastic Cutting it in right length + loping it around

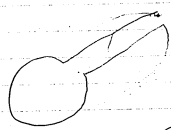
X

[ITEM FOUND IN BOOK]

2nd Pstd

The pepper & pressing in
smooth moulds

Lip -



Edison

[ITEM FOUND IN BOOK]

Pat

give boy 1/2 lb

more of the

yellow stuff

from same disc

you gave me some

from before

Edsel

[ITEM FOUND IN BOOK]

Petit

How are you

progressing

Ed

[ITEM FOUND IN BOOK]

Di - chlorhydrin cheaper
+ Epi - Chlorhydrin greater output

Notebook, N-10-08-22

Rome Co.,
MFG. STATIONERS,
69 FULTON STREET,
NEW YORK.
40613

029.4

Edison Laboratory
Book No 2 Small Record
Experiments upon paper
Foundation Cylinder Records

From Aug 22nd 1910

Moulded Blanks #8-19-10
1
Will be numbered #8-22-10
1
Rec'd P.M.
AUG 22 1910
Pressure 500 lbs 2 minutes
+ 1500 until cool

Moulded 2 Blanks # 8-17-10
1

The Matrix was made better than the blank
the blank only warm enough to render
the dope plastic a little, just so the
finger nail can indent it -
500 lb pressure for 1 minute then
up to 1200 lbs until cool -
the two records were perfectly smooth
one of them contained some cracklets
on the plain point.

Melted Edison Dope # 372
and filtered in Vacuum device
Coated 1 blanks will be numbered
#8-22-10
3

Rec'd P.M.
AUG 22 1910

Moulding Blanks #8-22-10 / 3
Will be Numbered #8-23-10 / 1

Entd P.M. AUG 23 1910

Blank #8-22-10 heated in oven over steam table for ½ hr. Temp. about 225 °F. then Rolled. These Blanks will be Numbered #8-23-10 / 1A

Moulded 1 Record, same Number.

Made 17 Blanks with Edison Base #373
Will be Numbered #8-23-10 / 2

Entd P.M. AUG 23 1910

Made 10 Blanks with Edison Base #374
Will be Numbered #8-23-10 / 3

Entd P.M. AUG 23 1910

Works best at 290° F. Temp. for Cold air it chills quick enough without its difficult to keep the Base from Bubbling.

Moulding Blanks #8-23-10 / 1A
Will be Numbered 8-24-10 / 1

Entd P.M. AUG 24 1910

Pressure 500 lb for 1 minute then 12000 lb. minute cool. apply Cold air with Ejector.
Moulded 5 Records Every one Good.

Put B. blanks in 8-23-10 in
Steam table oven temp 275°F.
for 4 hrs. there will
be numbered 8-24-10
These Blanks after heating were
stacked to cool again.
Pressed Rec. at will number 8-24-10
2 A

Ent'd A.M.
AUG 24 1910

Pressing Blanks # 8-23-10
Heated blanks in steam
making to heat the [illegible] applied
500 lb for [illegible] temp
[illegible] 1200 [illegible]
apply Elec. fan to cool the blanks once
free from bubbles these will be
numbered 8-24-10
3

Ent'd A.M.
AUG 24 1910

Pressed one Record coated as
8-23-10 upon a tube
wound with 14½ layers
of Paper this will be so
8-24-10, Coating was
too thin, the overlap of the Paper shows

Ent'd P.M.
AUG 24 1910

Pressed Blanks # B 8-23-10
Blank heated little,
Mating little more say about
150°F. Pressure 500 for 1 minute
1000 for another min.
1500 lbs for another
by Elec. fan
these will be numbered # B 8-24-10

Made 19 Blanks with Dr Pepper #318. Filled the dope in Vacuum But the fitter turn open in all probability. Some air passed its way through the dope while filling at 230°F without air coating But with all the blanks Dashed, the quickly and will not roll [illegible] 300° [illegible] enough [illegible] Blanks [illegible] all of the 19 Blanks look good enough to make good Records, But all of them are not perfectly smooth. These Blanks will be Numbered 8-24-10 6

Entd P.M. AUG 24 1910

Record one record will be 8-24-10 Blank was not perfect, and the Record is good

Moulding Blanks # 8-24-10 6

The Records will be numbered # 8-25-10 1

These Records appear to be of good quality. they mould Smooth, are Hard enough. 20 Blanks

Entd .M. AUG 25 1910

Made Four Blanks with Paul's Dope, his formula produced a mass that was too thick to coat Blanks. added considerable resin. this made it little thinner, but too brittle. would chill so quick that it would not smooth itself to the paper tube. then added Phenol enough to make liquid that made it also too brittle. Then added Shellac. this seem to thoughen it. will try again

Entd .M. AUG 25 1910

Entd AUG 26 1910 .M.

Contractor Records No
8-15-10 & 8-15-10
1A

they have assumed a Rough surface, enough to condemn them for commercial purposes, a white frost-like substance has appeared on the surface.

Remoulded Rec. # 8-25-10, as follows
Placed Record in Steam-table-oven for 20 minutes, temperature 225°F. the Dope becomes soft enough to disappear the recording. The Matrix is only moderately drawn say about 150 lb and press 5-00 lb for 1 minute & 1000 lb for another minute & 1500 lb until cool. this will be remoulded 8-26-10

Entd AUG 27 1910 .M.

Coated Blanks with Paul's Dope, first the Dope is composed of 1 Part Elsworth's Resin and 2 Parts of Chloride of Lead, this was too thick to work well, added Phenol to make fluid & coated 2 Blanks, Pressed one Record, was very Rough surface, then added Shellac & more Phenol, coated two more Blanks & Pressed Record the addition of shellac showed some improvement in the way of surface quality, added more Shellac & Phenol, which showed further improvement, made more Blanks, added more shellac & Phenol until the compound reached the quality of not hardening any more. Some of the Samples were of good enough quality to produce Commercial Records, the Resin has not the same contraction as the Shell and after the Dope is hard it assumes a gone-white like surface.

Moulded Blank # 8-19-10
will be Ready 8-29-10
1

Entd A.M.
AUG 29 1910

Special 2 minutes
Blank # 8-16-10 Sand papered
down to size + moulded
Record # 8-29-10
2

B. 8-23-10 R. 8-29-10
2

B. # 8-16-10 R. 8-29-10
2

Moulded Blank # B 8-24-10
Rec. # 8-30-10
6
1

Entd A.M.
AUG 30 1910

Made 6 Blanks for 4 minutes Records with Ds Dope # 392 chilled in cold water, then melted to 280° F. works good, the blank surface after it is set has a matte surface + also little uneven contraction. There will be tubes used for these were once coated and afterward stripped off. These will be numbered B 8-30-10
2

Made 4 Blanks same as above for 4 min-Records, Coated & Rolled to finish - These will be Numbered B 8-30-10
3

Made 9 Blanks same as above except that they were not Rolled to finish - These will be Numbered B-8-30-10
4

Made 5 Blanks with Dis Supa
#365A chilled in water
& reheated to 280° for cooling.
Entd .M. work well Blank surface
AUG 30 1910 after cooled & Rol does not have
perfectly flat surface. it is not
wavy but sort of wrinkled.
probable due to uneven contraction
These were cooled & Rolled to
turned little ends.
There will be numbered $\frac{B\text{-}8\text{-}30\text{-}10}{5}$

Made 5 Blanks same as above except
that they are for 4 mil Rounds & also
they have not been Rolled to polish.
They show a little pouty matter on
the surface, otherwise they look pretty
good. There will be numbered
$\frac{B.8\text{-}30\text{-}10}{6}$

Dimension of Blank for Matrix #8398

Title End 2.155" Centre 2.164 End 2.158

Matrix #9895

Title End 2.156. Centre 2.165 End. 2.159

Put in Steam table over night
Blanks $\frac{B\text{-}8\text{-}30\text{-}10}{4A}$ $\frac{R.8\text{-}31\text{-}10}{4A}$
Blanks $\frac{B.8\text{-}30\text{-}10}{6A}$ $\frac{R.8\text{-}31\text{-}10}{6A}$ Entd .M.
" $\frac{B.8\text{-}30\text{-}10}{2A}$ $\frac{R.8\text{-}31\text{-}10}{2A}$ AUG 31 1910
" $\frac{B\ 8\text{-}30\text{-}10}{4A}$ $\frac{R.8\text{-}31\text{-}10}{4A}$

Moulding Blank #$\frac{B\ 8\text{-}30\text{-}10}{2}$ O.K.

These Blanks requires a higher
temp to make. Metal is undoubtedly
moulded. Makes very good Blend —
Record $\frac{8\text{-}31\text{-}10}{1}$ is O.K
" $\frac{8\text{-}31\text{-}10}{2}$ O.K. Matrix little Rough.

Rec'd A.M.
SEP 1 1910

Moulded Blank # 8-26-10 / 6
After being in Steam-table
oven for 8 hours, about
700°F. Mill Numbers. 9-1-10.
the blank was sand-papered to level-off
or make surface without depressions
and heated again to render plastic.

Moulded Blanks 8-30-10. Heated
Blanks while the color is Brown.
The Matrix pretty hot. Pressure
500 for 1 Min. then 1000 for another
Minute & Force on Cold air
R 9-1-10
2

R 8-30-10 in oven 2 hrs. Temp. for
two Hours. Cooled & Sand papered to
Size & in oven again Temperature
200°. to make plastic. Moulded
Record which split open. that was
due to applying pressure too suddenly
or that the tube was once expanded
to make record. The surface of
this Record is Smooth & Hard. Keep for
further examination of hardness. Mill
Number R 9-1-10
3

8-30-10
3 and
Moulded 2 Blanks 8-30-10 one
was Rolled after cooling. The other was
not Rolled. both was heated in oven
for 10 minutes, matrix was moderately
hot. pressure was 500 lb for 1 min
4-12-00 for another 1 min. this time on
the cold air 5 min. I used the Same Matrix.
the Rolled Blank Extracted Little easier
8-30-10 is the Rolled Blank, it was
not quite as plastic as the other, played
them both and could not detect any
difference of surface nor Volume
of Quality. Both were good enough for
Commerce. except the 8-30-10 had
2 air spots. and will be numbered
9-1-10 the other 9-1-10
4 5

Repeated above Experiment, with another
Matrix # 4-M-12224. Result was Same. both
have air spots. probably due to the Blank
not being Plastic enough. R. 9-1-10 6 7

Repeated again with still another Matrix
which has little more taper, the
Blank was made little hotter also the Matrix

over

Moulded 2 Blanks 8-30-10
6
Heating 8 minutes, Plastic
Enter .M. Enough when color begins
SEP 1 1910 to change Matrix 120° Hot
Pressure 500 lb for 1 mi 1200 for
another 2 mi then turn on cold
air for 5 mi. The 2nd Record got stuck
on the matrix. the 1st is OK # 9-1-10
8
Moulded 2 more with another Matrix
End Measurement 2.190" & Blank 2.180
1st Record Extract fine and the 2nd
also. Will Number 9-1-10 both
9
are Very good in every way —
Reno —

Moulded 2 Blanks 8-30-10
6
with "Reno" Matrix which
measures at large End 2.190" & Enter .M.
little end 2.180", the Blank SEP 2 1910
measures .010" smaller. Method of moulding
the Blank is heated only slightly
not enough to discolor the dope, the
matrix is made about 150° F. pressure
500 for 1 mi & 1200 for another mi.
then turn on cold air for about 4 mi.
more the record extracts Result: the
record shows two air spots, this
will be Mutilated 9-2-10
the next blank was operated on the
same except the pressure which was
500 for 2 mi 1200 for another 1 mi.
& 1600 then turn on cold air,
did not extract quite as easy,
and show some air spots this will
be mutilated 9-2-10
2

Ent'd .M.
SEP 3 1910

Made Blanks with
Edison Dope # 374A. Could
not prevent Bubbling.
[illegible] on
[illegible] 1909.
[illegible] then Coated. [illegible]
[illegible] Annoiled
Some Records will number
[illegible] 7-3-10 [illegible]

1 2

Ent'd .M.
SEP 6 1910

Made Blanks of Edison
Dope # 374A-8 &
filtered Gualac Gum. 2 oz
The Gum was added
with intention to prevent Bubbling
it did so very considerably but it
still condemned [illegible] the
Coating works well and seems
hard enough. The Blanks will
be Numbered 7-6-10
Annoiled Recorded
will number 7-6-10
2

Entd .M.
SEP 7 1910

Tried Dally's Dope # 4HA
an old-Gold-Color mass.
it would not melt to
a liquid

Started work upon Large
Cylinder See other Book.

Moulded Blanks # 9-30-10
the Records will be 6
numbered 9-8-10

Entd .M.
SEP 8 1910

Record Perfect except few air spots
on Blank surface.
These Blanks have not been Rolled and
have now stood to season for 8 days, have
heated them in oven only enough to
be hard plastic the matrix was made
little hotter, the Result is an excellent
surface. The pressure is 500 for ½ min -
+ 1200 for 2 min - more + 1600 until
cooled with Elec. fan.

9-8-10 / 1B moulded same as above,
Record Perfect. Have compared just now
with a regular wax record that was
moulded yesterday from the same
matrix., the wax Record doesn't
reproduce quite as smooth as the
paper Record.

9-8-10 / 1C Just as perfect as # 1.B except
3 scratches caused by burr on edge of matrix
which scraped the record when extracting.

9-8-10 / 1.II. Just as good as above three

Pressed Blank # 8-30-10
Record Number 9-8-10
Just as good as above from O.K.
I.E.

Pressed Blank # 8-30-10
Record Number 9-8-10
Just as good as above from O.K.
I.E.

Pressed Blank 8-17-10
Record Number 9-8-10 Record is perfect
I.E.

Pressed Blank 8-16-10
Record Number 9-8-10
I.H. Record Good

Sizes of Matrices

	End	Center	T. End
Matrix "Play that Lovey Ele."	2.197	2.196	2.195
Blank	2.175	2.178	2.165
Difference	.022	.018	.010

Record Extracts easy.

Matrix "Reno"	2.192	2.186	2.174
Blank	2.172	2.172	2.161
Difference	.020	.014	.013

Records Extracts all right

Matrix "Reno"	2.192	2.186	2.174
Blank	2.172	2.172	2.158
Difference	.020	.014	.016

Record Extract all right

Matrix "Play that Lovey"	2.197	2.196	2.175
	2.174	2.177	2.165
	.023	.019	.010

Record Extracts all Right

Matrix "Put on your Slippers"	2.191	2.184	2.174
Blank	2.174	2.175	2.163
Difference	.017	.009	.011

Record comes out little Hard

OMNIGRAPH
SEP 8 1910

Matrix "March and Hamlin" 2.193 – 2.183 – 2.168
Blank 2.173 – 2.173 – 2.158
Difference .020 .010 .010
Record Comes out little Hard

Matrix "Lady Bug" 2.198 – 2.198 – 2.176
Blank 2.178 – 2.178 – 2.168
Difference .020 .020 .008
Record Drop out

Matrix "Lady Bug" 2.198 – 2.198 – 2.176
Blank 2.178 – 2.180 – 2.170
Difference .020 .018 .006
Record Drops out

OMNIGRAPH
SEP 9 1910

J-9-9-10

Paper tube wound with .003"
V.E 616 paper 10½ layers
after dried in oven, temp 200° for 10 hours and then standing in the open 3 weeks measures on outside Diameter 2.117", when fresh wound and Rolled, measures 2.133 & 2.193
Thickness of Wall .032" + .035 when fresh
.030 + .032 " air Dried
– for two days – Oven drying does not alter the thickness of the Wall.

Length 4.7/64
Diameter 2.117
Diameter 2.133 & 2.193
Diameter 2.117
Length 4.7/64

See nextpage for further datas.

Tubes bound on the 9-10th and left in the open will be Numbered J-9-9-10

ORANGE, N. J. U.S.A.
SEP 12 1910

Inspected all the Records that have been made since Aug 15th to the #365 A Dalley's Dope shows to be the most permanent.

— Paper Tubes —

The Winding mandrel measures 4 7/64" long & 2.168 Dia.

The Coating machine Harbors should be 2.154

on this date they are 2.150

The Tube Contracts .014" on the Dia.

ORANGE, N. J. U.S.A.
SEP 15 1910

Tubes wound and left in the open for two days then dried in oven temp. 200° for 8 hours. & let stand for two days more then Dip into shellac solution containing some Yellow Ochre & Red Acid in the object of this is to render the tube water proof and also to give a foundation since what Rough that the Record coating may drip better it is intended, nearly as a prime. these tubes will be numbered

Tubes # 9-15-10 / 1 (these tubes were again dried in oven after dip in shellac. sol.

Lot same as above Except that the tubes were not dried in oven before Dipping into shellac solution, they were dried after dip, for about 3 hrs. will number

Tube # 9-15-10 / 2

Lot of 12 tubes #7-9-9-10
Baked for 8 hrs. and left
in the open for 4 days and
Dipped in Shellac Solution
in Denatured alcohol and
Thickened with Pumpstone —
chalk, let stand 10 hr. while
open then Bake in oven for
4 hrs. there will be numbered
7-9-17-10

Lot of 12 tubes #8-9-9-10. Stood in
the open 4 days and dipped in
Shellac Solution above + Baked
for 4 hrs. will be numbered
8-9-17-10

Inspected some Records
that were on test for
High-temperature.
The Method employed
was that some ordinary
wax Records were placed in
box with some Paper Records,
the box was placed over heated
table — some distance away —
so gauged that temperature
of 110° to 112° F. was obtained
This lot of Records have been
standing Temp. test since
Sept 8th by being placed on
shelf near ceiling directly
over steam table where
temp. of between 80° & 95° was
obtained
this higher temp test was begun
2 days ago. when they were kept
warm at 110° for 5 hrs. and
yesterday again for 8 hrs.
The result is Record # 9-1-10/9
became plastic enough
to be marked by the wax Record
cleaning against it. The wax
was not marked. over

but the surface
was not altered much
by the reproducing on the
phonograph but the
wax Record to have assumed
a rougher surface than the
paper Record which is still
good enough to be Commercial —
Tape # 365 A

Record # 9-7-10 Same report
Tape # 365 A as the above.

Record # 8-31-10 Does not
2 A
show any Change from
what it was without first
put to test, Tape # 3 A

8-25-10 shows to have
assumed a little harsh surface
and dirt flakes where it cleaned
against the sides of the needle
Tape # 378

8-31-10
6 A remained same as
when put in Tape # 365 A

R. 9-5-10 Remained same
I. M.
as when first put to test
Tape # 365 A

R. 9-8-10
I. C. Remained same
as when first put into test
Tape # 365 A

Coating Blanks with
D'Dope # 487.

Entd .M.
OCT 3 1910

Melted to 250° F. &
would filter only about
Half the Quantity through
the 160 Mesh wire cloth and
linen.
the Coating of 19 Blanks was
effected without trouble. The
[illegible] 190° F. to 210°. Reason
to Suspence after 1½ hrs. Heating
the blanks were not Rolled
and No air blast was applied.
Air of the Blank are not bled
imp. perfect cause of dirt that
carefully fell into the dope.
There are no blanks that contains
air bubbles but 5 of them contains
depression which looks as if a
bubble had been formed
during the coating operation and
that burnished when cooling and
made a depression.
Will number B. 10-3-10

Moulded 1 Record will be R. 10-3-10
1-A

Coating Blank with
D'Dope # 486

Entd .M.
OCT 3 1910

Melt 4 filter through
160 mesh wire with linen
sheet in contact. this Dope is
much more fluid at 2 76° than
the # 487 it passed right through
the Double filter. the Coating
went on nicely, but the air
bubbles were more prominent than
in the # 487. Coated 17 Blank
Will number B 10-3-10

Moulded one Record will number
R. 10-3-10
2-A

Entd .M.
OCT 4 1910

Moulded B # 10-3-10 / 2
Will No P. 10-4-10. / 1

Moulded B. 10-3-10 / 1

Will No P. 10-4-10 / 2

Entd .M.
OCT 4 1910

Coated 12 Blanks with B. Dope # 488 Mixed & filtered through Double filter 160 mesh wire screen & Linen. passed through nicely at 180°F. Coating at 180, was troubled with Bubbles and prevented getting a Blank only by scraping the Blank slow and Taking on every Coat putting at the Bubbles make fairly good from Bubbles. These will be Numbered B 10-4-10 / 3

Moulded Record will number R 10-4-10 / 4

Moulded Record with Blank 10-4-10 / 3 treated to plastic condition from half hr. before pressing. will number R. 10-4-10 / 5

Moulded Record + Blank 10-4-10 / 3 Treated to make Hard-plastic matrix little hotter will number R. 10-4-10 / 6

Coated 17 Blanks
with D Resin # 365 R
[illegible]
[illegible]
[illegible] 16 gifed blank
[illegible] 10-5-10
1

Ent'd .M.
OCT 5 1910

Moulded Blanks # 10-5-10
Mill Number R. 10-11-10
1

Moulded ten of them
without any extra work, that is
The Blanks were coated and not
Rolled, were allowed to set, then
simply heating them to render
plastic and moulded as usual.
all good records except one
which showed that there was
a speck of dirt on the blank
or in the matrix.
These were moulded by giving
500 lbs for 1 minute 1200 lbs
for another minute & 1600
for 5 minutes more, but as
soon as the 1600 lbs was
turned on, the Electric fan
air blast was turned on to
assist cooling quicker.

Ent'd .M.
OCT 11 1910

Rec'd .M.
OCT 1 1 1910

Rec'd .M.
OCT 1 2 1910

Up to now the size of the winding Mandrel for the Snake tube has been 2.067" Dia. that produces a tube having .030" thick It is now proposed to make the tube .060" thick, so all the tools for the Construction of the tube will have to be changed in size which will be here recorded, the following are the Present Sizes

Winding Mandrel	2.067"
Trimming little. Die.	2.064
Little Ring turning die 1st	2.064
" " " " 2nd	2.047
Coating Mandrils	2.050

RECEIVED OCT 12 1910 ENTO. M

Mr Edison gave me instructions to form Estimate of plant for the Mfgn of 3000 records per 10 hrs. Gave it to him. Mr Wonder was put on the job of laying out the plant, assisting him with the outlining the requirements.

Made Experiments for Mr E. in a Record Jrnme by first moulding a core of cheap material then covering such core with finer material and heating such Blank to render it plastic, then moulding it by Hydraulic pressure same as the proper Records.
the result is that the cheap material core which is made up of Rosin (colophony) and Asbestos powder, would not contract out of the moulding, not even when placed in Ice water for as long as 48 hr.

Made another Ex by coating a Regular Montanes Wax blank with finer or harder material, in this case used P' Dope # 365 #. then heated the Blank to render plastic and mould under pressure as before. this Ex, allowed the Records to contract enough to leave the mothers and such Records is possible, in fact, it is possible to put a coating of Shellac or Gum or varnish, wax or paraffine or any other cheaper compound provided such compound has a contraction during the cooling.

Ent'd .M.
OCT 13 1910

Re: the making of Brand paper
Record No.

Made one. Found that if heaters were not quite as hot to allow the right amount of glue if allowed too much it go through which caused the sizing to become too wet with it and made crinkles.

Mr Edison claims that a lady had been injured in the Bid Book building opposite the Maple Office for well if only a plant to make 300 dollar paper Records per 12 hours

Placed 9 blanks in the oven over steam table for 6 hours at a temp only sufficient to render the coating machine flexible but not enough to run the gums the blank a colony affair these blanks build be numbered
S. B. 10-13-10

Ent'd .M.
OCT 14 1910

Coated 18 strips of thicker wall then heretofore the thickness when main dried. Strength 2 lb Number of tests 30 of the Vol. 616 paper
Allowed them to dry in the open for 24 hrs then placed in oven at about 200°F. for 4 hrs then placed in 25 degree Cold F.
Dry heated and with pressure then placed and kept in the open air then placed in the oven for two hrs these
Lewis Ca Number of 10-14-10

Ent'd .M
OCT 15 1910

Second test winding the 6 and Record Tubes made 3. The machine ran smoothly except in the Tubes as will be noticed by a difference between the Pads [illegible] the other pics are [illegible]

Moulded B # 10-14-10
1

Will Ne R 10-15-10
1

Moulded S.B. 10-13-10
1

Record Sta 10-18-10
1

Ent'd .M.
OCT 18 1910

Coated 6 Blanks Tubes # 10-14-10
1
Dope is slate color by mistake of Batch # 76 anilines

Pressed The Records will Number
10-18-10
2

Not one of these came out perfect two of them cracked open while pressing due to machine being too large the other 4 showed air spots.

Ent'd .M.
OCT 19 1910

Coated 8 Blankets made of News paper of Grade, thickness will
Number the tubes 1/10-14-10
Rope 365 B 2
and the Coated tubes B 10-19-10
1

The Records Number R 10-19-10
2

Coated 4 inch tubes # 10-14-10
1
with Rope 365 B
the Coated tube will be No 10-19-10
3

Ent'd .M.
OCT 20 1910

Entd .M.
OCT 21 1910

Winding Small Tubes
with News Paper
Before passing through vishg-
ace observes O.H 2.160
after standing in open 10 hrs 2.
18 gr. Gum is mixed for this Ex.

Entd .M.
OCT 22 1910.

Wound 14 Small Tubes
with News Paper. 15 h
layers .003" thick when
fresh wound measures
O.H 2.158 to 2.160
after passing through the spring
Ace measures measures 2.145
18 gr. Gum was mixed
After standing 36 hrs. measures
2.140
After 5 hrs drying in Oven
Temp 130°F measures 2.138
The wire Dr Nº 5-10-22-10

Ent'd .M.
OCT 2 1910

Coated T. 10-22-10
with T's Dupe # 365 not filtered
will Sr. B 10-26-10

Record 10-15-10 was put to
Cold test & cracked when
14° above 0

Moulded B # 10-26-10
will Sr. R. 10-27-10

Delivered 5 to for Cold test

Moulded B - 10-14-10
will Sr. R. 10-27-10
2

Ent'd .M.
OCT 27 1910

Ent'd .M.
OCT 27 1910

Wound News Paper tubes
18 ½ turns 1 Half & Half Best & cheap
Finish wound measures 2.135. O.D.
Thickness of Wall .0145"

After 14 hrs. Air Drying in Room at
80° temp. Measures. 2.138. O.D.
Thickness of Wall .070"
After 1 hr. more drying in Oven at
170° Temp. Measures 2.130"
Thickness of Wall .065"

See Next Page

Ent'd .M.
OCT 28 1910

Dipped 15 of yesterday's tubes
into Shellac solution in
Denatured alcohol into which
is added some chalk to
give the solution body and also
to act as a prime upon the tubes.
and place into oven again at
170° Temp for 2 hrs.

Entd OCT 31 1910 .M.

Wound 6 tubes running of mill speed about 260 Rev. in Cheap Gum Arb. 17½ turns. — 17¼ turns of Wheel Tuition on paper Roll.

Entd NOV 1 1910 .M.

Soaked yesterday's tubes into Mellac Ber. & chalk. and let drip for 1 hr. then in Oven for 3 hrs. Wide No 11-1-10

Careful Test of Tubes

Wound More tubes with V.E. 616 paper, Cheap Gum. Tuition on Roll. Fast speed 260 Rev. for 2 minutes forced through Lying die 2.145" after standing over night 2.134" O.D. Left in oven for 3 hrs. measures 2.125" O.D. then soaked in solution & dried in open air ready wanted for use.

Wound More tubes with V.E. 616 paper, Cheap Gum. Tuition on Roll. Fast speed 260 Rev. for 2 minutes forced through die 2.145" after standing over night measures 2.125. O.D.

Nov 2 1910

[illegible] 2.115

then soaked in solution & let stand in open air until wanted for use.

Entd .M.
NOV 2 1910

Coated J- 11-1-10
1
Will No B. 11-5-10
1

Coated J. 11-4-10
2
Will No 11-5-10
2

Coated J 11-4-10
1
with #365 Dis Dope with
Bone Block inlaid
Will No 11-5-10
3

Coated J- 11-4-10
2
with #365 Dis Dope with
Bone Block added.
Will No 11-5-10
4

Entd .M.
NOV 2 1910

Moulded B 11-5-10
2
with Reno Matrix which
is .1010" larger than
The Blank. The pressure
was 400 lb for 1 minute 800 for
another minute and 1800 lb for
5 minutes more with jam start
to cool. Record came out
good in every way Will No 11-5-10
6

Moulded B 11-5-10 with
Reno" Matrix. Pressure same
as above. The Heating was
obtain by placing the Cold
blank into The matrix and
heating the Matrix.
Record came out good in
every way Will No 11-5-10
7

over

Ent'd .M.
NOV 2 1910

Moulded B 11-4-10
Pressure 350 lb for 1 minute
600 " 1 "
900 " 1 "
1200 " 1 "
1600 " 1 "
with 1 flash 800 " 4 "
Record extremely good
Will 11-5-10
8

Moulded 11-5-10
3

measures at little end 2.170
other end 2.117
Matrix at little end 2.18
other end 2.192
Washed by placing the flask
cold in matrix and filling
latter, same pressure as
above. Record cracked skin
at large end for about 1 inch

Ent'd .M.
NOV 3 1910

Moulded B. 11-5-10
3
Record No. 11-3-10
Only little finishing.

Moulded B 11-5-10
3
Record 11-5-10
3
Was made flatter chemical. Moulds better
Smoother

Opened 17 tubes of V.E. 616 paper
low price Gum Solution
Metal pressure pad, this seems
to be an improvement, as it
lays the paper flatter and has
little to no blisters in the tube
Will Sr 3. 11-3-10
1

Ent'd .M.
NOV 5 1910

Records as they came rewound up to date do not stand the cold temperature test, all that have been put to 0°F. have cracked, consequently useless –

Ent'd .M.
NOV 7 1910

Made Six Records with tubes formed as usual then corrugated inside + outside with knurling-tool the tubes were not dipped into shellac solu. to make water-proof, the Records all cracked under Cold test, it seems that it is the paper tube that absorbs moisture and swell to crack the coating.

Made dip: Blanks with mixture as follows

Shellac 7 parts 7 ozs
Fat oleic 1/8 " 1/8 oz
Fused al. 1/2 fluid oz

Will Sta 11-8-10

The tubes were the Regular thick wall - and of V.E 616 Paper

Made - Composite tubes by substituting the Gum - Arabic for the Regular Record coating compound the tube winding machine is provided with heating device to keep the Dope liquid and that is about all that was necessary to form the new tubes. There is but very little contraction of the tubes after it is formed only .0

The tube is instantly ready for coating with record Dope to form the blank

The Compo - for tube building is as follows Chloro - Naph. 1/4 oz
Shellac 7. 1/4 oz
Stab 7 5 oz

The paper used is V.E 616

These will be no 11-10-10

Coated 8 tubes # 8-11-10-10

Entd .M.
NOV 22 1910

Winding Tubes with new Machine which is just Complete.
The paper used is from DEC 1 1910
the Ribbon + Liker Paper Co - of Paterson N.J. which is said to be 2 points Thick. But measures .0015 I will Call this paper R+J #1
The Dope used is mixture as follows Chlor-Nap- 6 oz
Stera G. 1/2 oz
Rosin 2 oz
Shel- 16 oz

did not mould Records from any of these above blanks for account of the little ends not being perfect.

Entd .M.
DEC 1 1910

Wound 8 tubes with
new Machine & Dope
Mixture as follows
Chloro-Nap — 6 oz
Ether 2 — 1/2
Rosin — 2 oz
Phthlac — 16 oz
the Coating seemed on all right
Tubes will be numbered
12-6-10
1

ENTD .M.
DEC 6 1910

Wound 28 tubes in new
machine with Dope
Mixture as follows
Chloro-Nap 1/2 oz
Sti.z. 1/2 oz
Shellac 16 oz.
The Coating of the paper is layed
very good! as good as practical
and the Machine is well adapted
to make a good blank V.
The one trouble experienced is
that the dope does condense
too soon — about 2 hrs. after
the dope is first melted into
the container condensation of
the dope on the sides — edges —
and bottom — has taken place
and some portions of that
condensed dope does mix
with the fresh which is added
from time to time — and those
portions of condensed dope will
not melt with the fresh dope
These Blanks will be numbered
12-7-10

ENTD .M.
DEC 7 1910

Ent'd .M.
DEC 7 1910

Coated [illegible] Blanks
[illegible]
And 12-7-10 with
[illegible]
Moulded Records 12-7-10
2

Ent'd .M.
DEC 8 1910

Moulded 9 Blanks
12-7-10 all of these
1
were imperfect in
the way of blisters
and depressions, moulded
Records with them especially
to test if the blisters would
swell out again after
the pressure in the Matrix
Cell number three R 12-8-10
7

Winding Tubes with V. E 1161 paper on new machine

Dope used is # 365 with 1 fluid oz of Fusil Oil to render more liquid particularly for purpose of filletting

There will be No 12-14-10

These blanks have been provided into making to wipe the mandrel for coating

Wound Tubes with Dope as follows Chloro-Naf 12 oz
Stem 1 oz
Shell 30 oz
Heated to 270°F & filtered through 60 mesh wire cloth & worked well all through & there will be
No 12-15-10
1

These tubes were all measured across the middle and the figures will be marked inside of the tube. this is to determine the thickness of Record Dope Coating

On account of the irregularity of the dimentional surface of the tube the coating could not be made to perfect. Turned off all the tubes in a lathe to measure 2.160" then coated them over, on which coating went on perfectly smooth there will be No B 12-15-10
2

Coated 5 tubes which measured less in Dia than 2.160" for the purpose of testing the weather the thickness of Record Coating is the cause of cracking when subjected to Cold & Heat there will be
No 12-15-10
3

Coated 2 tubes of the Blue Model the Dia. of which are 2-105" when coated they measure 2-178 that makes the coating .036" in thickness there will be No 12-15-10
4

Ent'd M.
DEC 17 1910

R. 12-17-10 — the Blank was heated in oven 150° F. for 3 hrs. then moulded. the Color is darker than others heated less.

Ent'd M.
DEC 22 1910

Winding Tubes with more Dope between layers of paper

Dope Chloro-Nap-	12
F. Stearate	12
Shel-	38

There are 26 tubes in this lot varying in number of turns and Dia. all are worked inside. the Dope worked first class remaining liquid for 3 hours.

Will Number 12-22-10
1

Ent'd M.
DEC 23 1910

Coating F. 12-22-10
1

Dope Chloro-Nap	5½
F. Stear	½
Shel-	15

Will Number B. 12-23-10
1

Ent'd M.
DEC 24 1910

Moulded B. 12-23-10
1

Will Number R. 12-24-10
1

These mould best when Blank is .014" in Dia. smaller than the Matrix. the Blank must be made plastic in oven heated not over 160° F. for about 9 minutes and the Matrix about same temp. the pressing is 400 for 1 minute 800-900 for another minute and 1800 for 6 minute more with cold air directed on to the Matrix to cool.

Will Number R. 12-24-10
1

Ent'd .M.
DEC 27 1910

Moulded more Records same as produced Oct 12th. this time the Experiment was more successful particularly on account of having put through a greater number of them which allowed more different method of operations such as rendering the Shellac more or less fluid & pressing more or less & the time under pressure and the time to let off the pressure. The Blanks — or rather the Core was the same as on Oct 12th and the Record coating compound was the same. The Device for heating the blank and for pressing the Record. are all the same as those used Oct 12th.

To day I find that the core of Montana Wax should be near to 2.075 in Dia and the Coated blank 2.160 this allows to use most of the Matrices. The Blank should be heated in oven 150° F until it is plastic but not sticky — the Matrices should be heated to about 150° F. The pressure should be from 0 gradually up to 1800 within a minute then turn on the cold air to chill. the pressure should be turned off before the Matrix has cooled lower than 100°. the further cooling allows contraction enough to drop out of the Matrix.

Ent'd .M.
DEC 29 1910

Coated more Montana-Wax Blanks with —

Chloro-Naph	5 1/2	parts
3-Powder	1/2	"
Shel	15	"

find that some precaution has to be exercised to make this successful. if the Dope is applied without cold blast of air it will peel off right there during the cooling, the Cold-air chilles the shellac Dope so quickly that it is incapable of separating to peel off.

Moulded some of the blanks made yesterday, these mould well enough with the proper care, first the blank must be heated slowly say at atmos. of 150°F. in about 15 minutes the blank is plastic enough to be pressed without liability of cracking, the matrix must not be heated so much that the Dope will stick to it. the pressures are from 0 to 1800. gradually going up. after 1 minute the color air may be thrown on in about 5 minutes more the Record is cool enough to be extracted. Some air spots have shown up which was the only defect with todays Ex. that is due to some air spots or depressions on the blank previous to Record pressing.

Entd DEC 30 1910 .M.

Pressed more Records of Blanks same as yesterday the comments are the same as yesterday.

Entd DEC 31 1910 .M.

Started to work upon a perforated sheet of paper with good blanks, an Edison has suggested the perforation of the paper & sketched out a punch & die for perforating and put it into making—

Ent'd .M.
JAN 4 1911

Made some and put on the Montana Wax Blanks & on the Coating machine & coated some more with same Dope. this Dope is particularly to overcome the improper shape & dimentions

Ent'd .M.
JAN 4 1911

Made more Blanks coated with Dope containing some asbestos Pulverized and sifted through 60 mesh. this Dope is so thick that

Ent'd .M.
JAN 4 1911

Moulded Records from Blanks made yesterday.

Ent'd .M.
JAN 5 1911

Started to perforate some V-E 616 Paper for the making of Blanks that are intended for format cracking when subjected to Cold Test.

Ent'd .M.
JAN 6 1911

Coated some more Montana-Wax blanks with asbestos — Extra Chlor-Naf — & Shellac Dope. This mixture works fairly well. But to be practical should be rendered more liquid — the Records all press out good with no more difficulty than #365 Dope.

Wound some Blanks by the method of passing twin through Record Ball and winding upon metal mandrel, then coating the periphery in the usual manner then processing the Record in the usual manner.

Result Records show Bebbs equal to the turns of the twin.

Wound more Blanks with twin, tried paper twin and soft cotton twin. On account of no special device to do the winding the Result was not good

Dope # 365

Wound more Blanks with twin by the method of winding the twin upon a Rough paper tube on foundations, this method shows much more possibility than without the tube.

Made a lot with one Row of Paper twine and a fine thin hair the paper cloth was passed through the hot Dope tube holding the control of the two was too much knotted some special device. This lot will be numbered

1-19-11
1

There is on hand 4 different size of paper twine which I will give numbers according to their diameter the smallest will be No 1 next larger #2 next #3 the largest #4

Wound another lot with #2 paper twine upon paper tube — passing the twine through the hot Dope no one as before these will be No

1-19-11
2

Wound another with No 3 paper twine passing through the Dope same as before but the apparatus is now provided with a screw used to control the pitch of each turn of the twine this makes a much more uniform tube.

these will be No

1-19-11
3

Ent'd .M.
JAN 26 1911

Blanks Nos 1-19-11 / 1 2 4 3
were coated, (Rough coated)
with a mixture of
Chloro-Napt 6 parts
G. Stearate 1 "
Shell 16 "
Ground Wood Pulp 1 part
The mass is pretty thick to
work but can be applied.

Two of the Blanks were
coated quell sizes so only
gave Records moulding for
the purpose of testing the
Compack quality
These will be 1-19-11 / 3 A +
1-19-11 / 2 A

Ent'd .M.
JAN 24 1911

Moulded 4 Records
with Blanks # 12-23-10 / 1
+ 12-15-10 / 2

The Blanks were heated in
oven 150° F. for 3 hrs. this
has the effect of so drying the
paper that so much that
unless the matrices are carefully
selected to suit the blank
they will burst or split open
when the pressure is applied.

These Records will be No 1-25-11 / 1

Coated Paper Tubes
11-3-10 The tubes
were treated for 8 hrs.
at 150° F. and Coated
with # 365 Dope
will be Blanks 1-24-11

Coated [illegible] Tubes
[illegible] Blanks

Made Blanks by Coating
with #365 Dope on the surface
of one thickness of # V.F. 616
paper wound upon a
mandrel. The total
thickness of the Blank Wall is
.025" the method is practly
possible.
there will be Blanks 1-25-11

Pressed Blanks # 1-25-11
they press good and
stiffen all right
there will be Blanks 1-26-11

Tried to Water-Proof some News-Paper Bilanytes by dipping into glue. Cast the tubes was heated in Oven 150° F. for about 1 hrs then into Black Ozokerite at 350° F. for about 7 minutes and washed in warm Benzole.

The Object is to split that Bored oven ~~the~~ this better Wood tube which is unbearable to stand the Cold Test.

The Record above discarded was Tested for Cold 47° below 0 and cracked.

Ent'd .M.
JAN 26 1911

Made Records by first boiling Bored Spiral wound Tubes into Black Ozokerite 350° F. and washing off excess into warm Benzole then coating with #365 Dope and pressing into molds. Result the inner tube burstied up.

Made Record by first boiling a wood tube into B. Ozokerite and drying for 24 hrs. then Coating it with #365 Dope and pressure the Record. the wood cracked with the pressure and would not contract out of the Mould at ordinary temp. Cooled upon ice which caused it to come out. and immediately the wood did split open.

Ent'd .M.
JAN 27 1911

Ent'd .M.
FEB 1 1911

Made Experiment by dipping Spiral-wound inner tubes into a Compound of Extra-Chloroform & G. Elastic & it [illegible] in proportions to make the liquid strength to dip [illegible] & then after drying a few [illegible] [illegible] the Dope [illegible] the Blank [illegible] the Mandrel and the Inner [illegible] Hot enough to melt the Dope upon the Blank and [illegible] fill the Mending [illegible] [illegible] The Result is good. For [illegible] the objection is life below Contraction of the present [illegible] of the Rubber.

Ent'd .M.
FEB 2 1911

Made Compound for Inner-tube Dip. to render same waterproof and at the same time to cause a contraction of same when subjected to great heat this Compound having great contraction itself is expected to draw the Rubber tube with it when the Dope has absorbed the Comp. the formula is as follows

Paraffine	3/4 lb
Crude Montane Wax	3/4 lb
Elaterite	2 oz.

heat to 330° F.
it requires about 4 hrs to dissolve the Elaterite when it ready for use.
Dipped 9 inner tubes the first 2 were into Solution for 1/2 hr. and they absorbed Each 7/8 of one ounce of solution — The Dry tube itself weighs 7/8 of 1 oz.

ENTD .M.
FEB 10 1911

Started to work upon a Record which will have a plastic material Com that is a cylinder made of a material rendered plastic by heat and pressed into mould while in that condition and sets upon cooling

The Plastic compound must be very cheap. Therefore will make some experiments with Rosin as the principal Base.

Rosin with ~~[illegible]~~ Corn oil makes a fine mass, which is clear and does not Bubble. it renders the Rosin less brittle

Copal - 7 pt. cents. Rind dissolves in Acetanilide and in alpha-Naphthol in Acetanilide produces a hard brittle mass.

in Naphthol produces a plastic mass

ENTD .M.
FEB 10 1911

Made a sample of Plastic which is composed of Rosin Coal-ash ~~[illegible]~~ Corn oil and Cotton flock.

Made another mass of Rosin Lamp-black and Cotton flock

Made another mass same as first above less the Corn oil.

ENTD .M.
FEB 11 1911

Made Composition consisting of Rosin 3 1/2 oz
Coal ashes 1 3/4 "
Cotton flock 1/2 oz
Corn oil 1/2 oz

Entd .M.
FEB 14 1911

Completed Drawings for Moulding Device to form foundation tubes for cylindrical Records

Rosin 3 oz
Corn oil 1/2 oz (liquid measure)
Coal ashes 1/2 oz
Cotton flock 1/2

Rosin 2 oz
Corn oil 1/4 oz (weight measure)
Coal ash 7/16 oz
Cotton flock 7/16 oz

2-14-10
2

pretty good
Dry and substantial enough

Entd .M.
FEB 15 1911

Elaterite with Stearic and and Rosin with the asphaltum mixe the two separately

Rosin & Silicic Acid
[illegible] hard brittle [illegible] tougher than Rosin and not so stiff

Entd .M.
FEB 17 1911

2-17-10

Rosin - B.S. & Shellac
little Picric Acid. Melt altogether and pour upon Rolls and add Cotton Flock & China Clay Equal parts.
— Good — try again —

Gum Accroids Mixes with B.S. to form a hard Brittle Mass.

Rosin with Limedrol mixes well together to form a nice clean mass that is less sticky but almost as brittle as Rosin (Same proportions)

B. S. with Lead Resinate forms a hard mass that is sticky when 100° F. but brittle at lower temp.

Ethyl-Chlor-Nap with B. S. and Ethyl-Chlor-Nap-Residue forms a very hard brittle mass.

Soapstone with Rosin forms a hard mass tougher than Rosin and not sticky at normal temp.

B. S. with Manganese Carbonate forms a dry-hard and fairly tough mass — try again

Soap Stone makes a very good filler for B. S. takes up a considerable amount of Bubbling substance but does not harden it unless it is saturated with it

Abietic Acid combines with B. S. to form a beautiful Glossy Mass. Hard but brittle

Calcium Carbonate mixes well with B. S. but remains Soft & Sticky

Barium Carbonate mixes well with B. S. but Remains Soft and Sticky

Magnesia Sulfurica with B. S. boils up when one is added to the other hot.

Entd .M.
FEB 22 1911

B.S. bring to boiling add Copper Carbonate little by little to the point when the mixture when cool is brittle.

In another dish melt B.S. to boiling add litharge little by little until when cool it forms a some hard or plastic mass. then turn this mixture through a filter into the Copper Carbo mixture and add just enough to obtain the consistancy required.
This forms a beautiful black glossy mass somewhat brittle and softens at blood heat temp.

The addition of Ceresine to the above reduces the brittleness. But will take only a limited quantity

Entd .M.
FEB 23 1911

Put on Steam Table the following mixtures –
Linseed-ol- with Carbonate of Copper –
Linseed ol. with Manganese Oxide
" " " " Carbonate
" " " " Borate
" " " " Litharge
Rosin with Carbolic acid –
B.S. " " "
Albumen " " "

Entd .M.
FEB 24 1911

Made a plastic mass of Starch and Zinc Chloride to a thick consistency (was very tenacious!
Added Barium Carbonate to harden

Entd M.
FEB 24 1911

Heated Rosin 4 oz
Linseed oil 1 " for
at 250°F. 2 days — Poured upon
Rolls & added mixture
of Half Soap-stone & Cotton
flock into form a plastic mass
This Sample will be Dt. 2-24-10
Mass too soft

Entd M.
FEB 25 1911

Manganese Oxide 1 oz
Silicate of Magnesium 1/2 oz
Flock 1/2 oz
Corn Oil ½ oz

Mix the flock & Corn oil over
Heat until well incorporated then
mix the two above thoroughly
this will be Called Filler #1
Too

Entd M.
FEB 25 1911

Coal ashes 1 oz
Silicate Magnesium 1/2 oz
Flock 1/2 oz
Corn oil ½ oz

Mix warm as before
Filler # 2 too much oil
N. G.

Entd M.
FEB 27 1911

Result of Digesting Rosin
with Linseed Oil for one
week over Heat at 150°F.
It raises the Melting Point
some, but does not reduce the
brittleness enough to pay for the
Heat consumed

Digesting Linseed oil with
Carbonate of Copper or with
Manganese Oxide or "
" Carbonate produces
a gelatinous mass that will
not dissolve again in Mineral
at the same temp or even a
much Higher. It can be Heated
enough Hot warm to melt it but

ENTD .M.
FEB 27 1911

then the resulting mass is a very brittle mass not much more unpleasant than Plain Rosin.

Digesting B. S. over Heat at 150°F. with Manganese Oxide produces a Semi-Hard mass similar to coal tar, but softer & less than 100°F. and becomes sticky

Rosin with Ch. Acid produces a dry Brittle mass more brittle than Plain Rosin.

Filler #3

Coal ash	1 oz
Soap Stone	1/2 "
Cotton flock	1/2 "

ENTD .M.
FEB 27 1911

Plastic Mass. #2 2/27/10

filler #2 with Shellac produces a very tenacious mass. Could stand little Clus. oil. try again (Sample pretty good)

this same filler with Rosin will produce a mass that does not Harden. remains soft & sticky M.G.

Filler #3 16 parts
Rosin 15 "
add little Benzole when on the Rolls to make more plastic
This will Sp 2/27/10
2

Test — the mass is more brittle than #1 But Harden and dryer

filler #3 with Mixture of Rosin 1 oz & Linseed 1/4 weight on Heat 150°F. for 4 days and nights ——— 1/2 parts
Filler #3 ——— 1/2 "
This will Sp 2/27/10
3

Ent'd M.
FEB 27 1911

Filler #4
Manganese Oxide 1 oz
Cotton Flock 1 "

Filler #4 — 3/8 oz
Mixture Rosin 1 - Linseed oil 1/4 — 3/8 oz
this will Sr 2/27/10
4
Good

Filler #4 — 3/8
Rosin 1/4
Red oil 1/8
this will Sr 2/27/10
5
Similar to above, not quite so dry

Ent'd M.
FEB 28 1911

Filler #5
Manganese Oxi 1 oz
Soap Stone 1/2 "
Lamp Black 1/16 "
Cotton flock 5/8 oz

Filler #5 1/2 oz
#1. Fin Sec. Rosin 7/8 "
will Sr 2/28/10
1
Fair
little soft

Filler #5 1/2 oz
Rosin 1/2 "
7½ & Copal 1/8
will Sr 2/28/10
2
Good
try Cyl.
So for the Rest

Filler #5 1/2 oz
Shellac 1/2 "
Rosin 1/8
will Sr 2/28/10
3

Filler # 6
Rotten Stone 1 oz
Lamp Black 1/16 "
Black 1/2 "
Try again with 1/8 more Black

Entd FEB 28 M.

Filler # 6 1/2 oz
Rosin 3/8
7½% Copal 1/8
Not tough enough try with Filler #5
Mill No 2/28/10
4

Filler #5 — 1/2 oz
Rosin 3/8 "
7½% Copal 1/8 "
Mill No 3/1/10
1

Entd MAR 1 1911 M.

Filler #5 1/2
Rosin 1/2
7½% Copal 1/8
Mill No 3/1/10
2

Filler # 5 — 1/2
Rosin 1/2
Shel 1/8
Mill No 3/1/10
3

Ent'd .M.
MAR 1 1911

Filler #7
Rotten Stone 1/2 oz
Mang Ox 1/2 "
Soap Stone 1/4 "
Cotton flock 3/4 "

filler #7 — 1/2 oz
Rosin 1/2 "
7½ Copal 1/8 "
Will Sr's 3/1/10
4

filler #8 1/2 oz
Rosin 1/2
7½ Copal 1/8
Will Sr's 3/1/10
5

Under the Rolls this works stiffer than # 4

Ent'd .M.
MAR 1 1911

Filler #8
Manganese Ox. 1/2 oz
Coal Dust 3/8 "
Soap Stone 1/4 "
Cotton flock 3/4 "

Ent'd .M.
MAR 2 1911

filler #7

Entd 1.44
MAR 2 1911

Plastic Mass to Make
Sample tubes
Sunk as No. 3/1/10

Filler #5 — 1/2 oz 2
Rosin 3/4 " 1 1/2
7½# Copal 1/4 " 1/2
B #. 3/2/10

Filler #9

Rotten Stone 1/2 oz
Soap Stone 1/2 "
Cotton flocks 3/4 "

Entd 9 A.M.
MAR 3 1911

Compound:
Gas Pitch 1/4
Shel 3/4
in Small Cacerules on Steam table

In Another Gas Pitch 1/4
Rosin 3/4

Shellac & Gas P. Mixture after 1 hr on steam table
seems to mix well but does not
prevent Shellac from Condensing.
This mixture with filler #5
Cbill No. 3/3/10

Filler #9 1/2 oz
Rosin 3/4 oz
7½# Copal 1/8 " Good
Silicate 1/16 "
Cbill No. 3/3/10

Ent'd .M.
MAR 3 1911

Filler #10
Rotten Stone 1/2
Soap " 1/2
C. Black 1

Filler #10 1/2 oz
Rosin 3/4 "
7/2 Copal 1/8 "
Will No 3/3/10
3
Good

Filler #10 — 1/2 oz
Rosin 1 "
Copal 1/8 "
Will No 3/3/10
4
Soft Test-Cracks

Ent'd .M.
MAR 3 1911

Moulded tubes with
Plaster # 3/1/10
1
Will No 3/3/10
1

Ent'd .M.
MAR 4 1911

Filler # 10 — 5/8 oz
Rosin 7/8 "
7/2 Copal 3/8 "
Will No 3/4/10

Scrap-1/4 addedcorte above will No 3/4/10
Thrughs then without scrap — 1X

Filler #10 — 5/8 "
Rosin 7/8 "
7/2 Copal 3/8 "
Tetra Ch. Nap 1/8 "

Will No 3/4/10
2

Not so tough as without Tetra-Chlo-Nap
Heated material more on side
which produced flaws. # 3/4/10
Test. More brittle than #2 2X

Ent'd .M.
MAR 4 1911

Filler # 10 — 5/8 oz
Rosin 7/8 "

Ent'd .M.
MAR 6 1911

Binder # 1
Rosin 5 oz
6½ Hopel 1 oz
Melt rosin and add Hopel
Enough to make 4½ lb. and
Elow till the Rosin & Hopel

Made Plastic as follows
Rosin 1 oz
6½ Cap. 1/8"
Bring to a boil and allow all gases
to escape. Pour this upon
the Rolls and add 3 lb of #5 Blk
Will Sr. 3/6/10
1

12 Filler

Lamp Black	1/32
Rotten Stone	1/2 "
Iron Stone	1/4 "
C Flock	3/4

Ent'd .M.
MAR 7 1911

Filler # 9 — 1/2 oz
Binder #1 3/4 "
Will Sr. 3/7/10
1 Good — little brittle.

Filler # 9 — 1/2 oz
Binder #1 1 "
Will Sr. 3/7/10 Not tenacious
2 enough

Filler # 13 1/4
Binder # 1 1/2 Good
Will Sr. 3/7/10 little brittle
3

ENTD
MAR 7 1911

Filler #13

Magnesium Oxide 3/8 oz
C. Flock 1/4 "

Filler #13 — 1/4
Rosin #1 — Mealy
Will No 3/7/10
4

3/4
Mealy

3/7/10
5

Filler #14

Rotten Sto. 5/8
Soap 3/8
L. B. 1/8

Clear Rosin 4/8 oz
Ground 6½ Copal 1/16 oz
melt on Rules and add
C. Flock 1/8
mix thoroughly & add
filler #14 1/8 Good
Will No 3/7/10 Little better
Just as good as melting the Rosin & Copal separ hand
6

Clear Rosin 4/8
Ground 6½ Cop 1/8 Good
melt on Rules & add Better than #6
C. Flock 1/8
filler #14 3/16
Will No 3/7/10
7

Same except use
filler #14 1/4 instead of 3/16
and mix the Copal with filler instead
of with Rosin
Will No 3/7/10 better than #7
8

ENTO M.
MAR 7 1911

Clear Rosin 4/8
Flock 3/16
Filler #15 5/16
mix throughly & add
Mixture 5/
Linseed Oil 1/8
& Filler #14 5/16
Will Sr. 3/5/10

Good
better than #8

Filler # 15
Rotten Stone 5/4
Copal " 4/4
Soap Stone 3/4
Silicate 2/4
L. B. 1/4

ENTO M.
MAR 8 1911

Rosin — 8/16
Flock 3/16
Filler #15 5/16

M. G. Hard and pretty tough but little sticky and adheres to the machine
Silicate is not good

Filler # 16
Rotten Stone 5/4
Copal 4/4
Soap Stone 3/4
M. R. 2/4
L. B. 1/4

Rosin 8/16
Flock 3/16
Filler # 16 5/16
Will Sr. 3/5/10

Pretty good
try again

Entd MAR 8 1911

#17 Filler

Rotten Stone	5/4
Copal	4/4
Soap Stone	3/4
L. B.	2/4
Magnesium Ox.	1/4

Rosin	8/16
Flock	3/16
Filler #17	5/16
Will No 3/8/10	
2	

Rosin	8/16
Flock	4/16
Filler #17	5/16
Will No 3/8/10	
3	

Rosin	8/16
Flock	5/16
Filler #17	5/16
Will No 3/8/10	
4	

Entd MAR 9 1911

Melt Rosin & Parts with 6½ Copal " for about 12 hrs or until all gases have escaped Will Call this Binder #2

Rosin	5/16
Binder #2	10/16
Flock	5/16
Filler #17	5/16

Too tough to work

Rosin	10/16
Flock	5/16
Filler #17	5/16
Will No 3/9/10	
1	

Seems to have considerable Contraction

Rosin	10/16
Flock	4/16
Filler #17	6/16
No 3/9/10	
2	

Rosin	10/16
Flock	5/16
Filler #17	5/16
No 3/9/10	
1 3	

Ent'd .M
MAR 9 1911

Rosin 8/16
Flock 2/16
filler #14 4/16.
Copal 3/16
No 3/9/10
4

#18 filler

Rotten Stone 10/8 — .50
Copal 8/8 — 4.0
Soap Stone 6/8 — .30
L. B. 2/8 — .10

Rosin 4/8 has
Flock 1/8 contraction
filler #18 4/8
No 3/9/10
5

Ent'd .M.
MAR 9 1911

Rosin 4/8
Wood Pulp 4/8
filler #18 3/8
3/9/10
6

Rosin 6/8
Wood Pulp 4/8
filler 3/8
3/9/10
7

Rosin 5/8
Wood Pulp 1/8
filler 3/8
3/9/10
8

Ent'd
MAR 10 1911

Rosin 4/8
W. Pulp 7/8 has
filler # 1/8 3/8 Contraction
3/10/10 Not much
1 Cementation —
Nothing should be Notice.

Rosin 4/8
W. P. 7/8
filler #1/8 4/8
3/10/10
2

Rosin 8/16
L. B. 3/16
Wood 3/16
3/10/10
3

Rosin 8/16
Cop. 3/16
L. B. 3/16
Wood 7/16
3/10/10
4

Ent'd
MAR 10 1911

Rosin 7/16
Copal 7/16
L. B 3/16
Wood 7/16

Rosin 7/16
Shel 3/16
L. B. 3/16
W. P. 7/16

Rosin 8/16
W. P. 3/16
Shel 7/16
L. B 3/16
3/10/10 — 5

Rosin 8/16
W. P. 3/16
Locust Gum 7/16
L. B. 3/16
3/10/10
6

Rosin 8/16
L. B 3/16
C. Flock 7/16 3/10/10 — 7

Entd .M.
MAR 1 1 1911

#19 Filler

China Clay 5/8
Copal 3/8
R. Bi 2/8

3/11 Binder

Nitro-Chlor-Nap. 4/16
6½# Copal 7/16
Rosin 14/16

3/11 Binder
2

Nitro-Chlor-Nap. 4/16
6½# Copal 4/16

3/11 Binder
3

Nitro Chlor-Nap- 6/16
Rosin 6/16
6½# Copal 8/16

Entd
MAR 1 3 1911

Binder 3/11 4/8
1
Flock 1/8
filler #19 2/8

3/13
1

Binder # 3/11 6/16 Good
1
Flock 2/16
filler # 19 3/16

3/13
2

Binder # 3/11 6/16
1
Flock 5/32
filler # 19 7/32

3/13
3

3/11 Binder 6/16 Little soft
2
Flock 2/16 Dull
filler #19 9/16 Contraction
3/13 Starch Nap Vert.
4

Binder # 3/11 — 6/16
flock 3 2/16
filler # 19 3/16

Sticks to mold a little Has no Contraction

3/13 / 5

Binder 3/11 / 3 6/16
flock 2/16
filler #19 4/16
3/13 / 6

Sticks to mould a little has no Contraction

Binder 3/11 / 3 5/16
flock 2/16
filler #19 4/16
3/13 / 7 Cracked 1st test

3/4/10
Binder # 1 6/16
flock 2/16
filler #19 4/16

3/13 / 8 Dont stick to mold
Cracked first test

3/13/10 / 1 Binder

Remark: little too much mono-chlor.

Mono-chlor-Nap.	1
6 1/2 # Copal	2
Rosin	4

Heat mono-chlor & cover it with the Pulverized Copal and Raise temp. to 440°F then add Rosin gradually and allow temp. to drop to 400°. Keep Cover on [illegible] to compression the gases which assist in melting the Copal.

#20 3/13/10 / 1 Filler

China Clay 6/8
L. B. 2/8

MAR 1 4 1911

Binder 3/13 — 5/16
flock 1 3/16
Filler 3/13 3/16
1
3/14/10 Little plastic
1 Just-Cracked

Binder 3/13 8/16
1
flock 9/32
filler # 3/13 9/16
1
3/14 Just-Cracked
4

Binder 3/13 8/16
1
flock 7/16
filler # 3/13 3/16
1
3/14
2 Just-Cracked

Binder 3/13 6/16
1
flock 7/16
filler # 3/13 3/16
1
3/14
5 Just-Cracked

Binder 3/13/10 5/16
1
flock 7/16
filler # 3/13 5/16
1
3/14
3 Just-Cracked

Binder 3/13 6/16
1
Shel 7/16
flock " 5/32
filler # 3/13 7/32
1
3/14
6 Just-Cracked

Ent'd
MAR 1 4 1911

Binder 3/13 / 1 — 6/16
Flock — 2/16
S. B. X — 3/32
3/14 / 7

Binder 3/13 / 1 — 6/16
Flock — 2/16
Colony X — 4/16

3/14 This Sample is more tenacious than the above and harder

Binder 3/13 / 1 — 6/16
flock — 2/16
Lime — 9/32
3/14 / 8

Ent'd
MAR 1 4 1911

Mono-chlor-Nap. — 1 Parts
Copal — 3 "
Rosin — 5 "
Binder # 3/14 / 1
Heat to 450° + Pour off in cold water.

Tetra-chlor-Nap. — 1 Parts
Copal — 2 "
Rosin — 4 "
Binder # 3/14 / 2
Heat to 450° + Pour off in cold water

ENTD
MAR 1 5 1932

Binder 3/14 / 1 — 6/16
Flock — 7/16
Lime — 6/16

3/15 / 1

Limit of flock & lime

Binder 3/14 / 1 — 7/16
flock — 7/16
lime — 8/16

3/15 / 2

Binder 3/14 / 1 — 7/16
flock — 7/16
Lime — 5/16
C. Ash — 3/16

3/15 / 3

Binder 3/14 / 2 — 6/16
flock — 8/16
Lime — 7/16

3/14 / 4 try again, with better powder

Binder 3/14 / 2 — 7/16
flock — 3/16
Lime — 8/16

3/14 / 5

Rolled longtime.

Binder 3/14 / 2 — 7/16
flock — 3/16
Lime — 5/16
C. Ash — 3/16

3/14 / 6

ENTD
MAR 15 1911

Rosin	4/16
Pul. Copal	3/16
Phenol	2/16
Lime	18/16
Flock	1/16

Pretty hard mass but # 3/14
no tensity.
Moulds good. Try again! Not Just Cracked

Rosin	1/16
Oxide Silica	4/16

3/14
8

Rosin	32/16
Zinc Oxide	1/16

3/14
8

3/14 with flock
8

3/14
9

ENTD
MAR 16 1911

Rosin	1 Part
I. Earth	1/16 "

3/16
1

Binder # 3/14	3/16 Part
I. Earth	5/16 "

3/16
2

5 parts of Earth to 3 of parts of Binder is limit

Binder # 3/14	8/16 parts
Flock	2/16
I. Earth	3/16

3/16
3

Entd M
MAR 17 1911

Comp. # 365 A. 10
flock 2
I. Earth 6
3/17 Good
1 Hard + Tough

Comp. # 365 A 8
flock 1
I. Earth 4
3/17 2nd test
2 Cracked at 8 feet

Comp. # 365 A 8
flock 2
I. Earth 3
3/17 2nd test Good
3 Hard Tough

Comp. # 365 A 20
I. Earth 13
3/17 1st test. Cracked
4

13 parts of Earth to 20 of Comp. is limit

Comp # 365 A 10
flock 3
3/17 3rd test Good
5

Three parts of flock to 10 of Comp. is limit

Comp. # 365 A 10 Good
flock 1½
Earth 7 After 30 days
3/17 Cracked with Drop
6 of 12 feet.
This works stiff but moulds good

Comp # 365 A 10
Binder # 3/14 5
2
flock 2
I Earth 10 Fair
3/17 2nd test cracked
7
This works stiff. Moulds were too fat

Comp # 365 A 10
Binder # 3/14 5
flock 2
I Earth 10
3/17 2nd test. Cracked
8

Works more plastic 8 than #7 due to more chlor.

Ent'd .M
MAR 17 1911

Comp. #365A 10
Flock 1½
Zinc Oxide 12
3/17 Good
Little too much Z. 9 2nd Test Cracked

Comp. #365A 10
Flock 1½
Z. Ox. 10
Stands Scratch Test # 3/17 3rd test Cracked
10
Little too much Z. works stiff at finish

Ent'd .M
MAR 18 1911

Comp. #365A 10
Flock 1½
Z. Oxi 9
3/18 3rd Test Cracked
1
Stands Scratch test

Comp. #365A 10
Flock 1½
Z. Oxi 8
3/18 2nd Test Cracked
2
Stands Scratch Test

Ent'd .M
MAR 18 1911

Comp #365A 10
Flock Best proportions 1½
Z. ox 7
3/18 Good
3 Stands Test. Best
L. J. Good believe it is due to extra pressure
Cracked on the 2nd pressure

Comp. 365A 10
Flock 1½
Zox 6
3/18 3rd Test —
4 Cracked
from 12 feet high

Ent'd .M.
MAR 20 1911

Comp. 365A 10
Flock 1½
Zoo 5

3/20
1

Comp. 365A 10
Flock 1½
Zoo 4

2nd day brood

3/20
2

Comp. 365A 10
Flock 1½
Zoo 3

3/20
3

Mouldy brood

Comp. 365A 10
Flock 1½
Zoo 2

3/20
4

Ent'd .M
MAR 20 1911

Comp 365A 10
Flock 2
Zoo 1

3/20
5 N.G.

Comp. 365A 10
Flock 2
Earth 3
Zoo 2

3/20
6 Good

Mouldy brood. 2nd day brood

Comp. 365A 10
Flock 2
Lime 3
Zoo 2

3/20
7

Comp. 365A 10
Bulb. Asbestos 10
Earth 2

3/20
8

2nd Lot - Cracked

Ent'd
MAR 20 1911

Comp: # 365A 10
Asbestos 10
Earth 4

8/20
9
Good

2nd Test Cracked

Moulds Good – Hard. Can be Ground Longer under Roller.

Ent'd
MAR 21 1911

Comp # 365A 10
Asbestos 10
Zinc 3

3/21
1

Comp. # 365A. 10
Asbestos 12
Zinc 2

3/21
2

Moulds Soft

Comp. # 365A 10
Asbestos 14
Zinc 12

3/21
3

Comp. 365A 10
Rubr. Asbestos 20

3/21
4

Moulds Good
Cracked 1st Test. Very hard

Ent'd .M
MAR 21 1911

Comp. 365 A 10
Asbes-wool
3/21
5

Comp. 365 A. 10
~~Flock~~ 2
Barium Sulphate 24
Moulds good # 3/21
6 Cracked 2nd test
Good Hard Mass
Requires long mixing

Comp. 365 A 10
Flock 2
Calcium Sulphate 14
Moulds good # 3/21
7 Cracked 2nd test
Hard Mass.
Don't mix well.

Ent'd .M
MAR 22 1911

Asb. wool 1 Part
Pulv. Asb. 20 "
Liquid to gather until the wool no longer hangs together will call this
filler 3/22
A

Comp 365 A 10
filler 3/22
A 17
3/22
1

Shel 10
filler # 3/22
A 16
3/22
2

Binder # 3/14
2 7
filler 3/22
A 13
3/22
3

Made brick of Plaster # 3/20/2
for Mr E..
Heated Plaster on steam
Table
Heated Matrix over steam-
table steam at 60 lb
Pressed 1/2 minute 350 lb □in.
Cooled off immediately, about
6 minutes. Record made —
The Plaster did flow well
and surface of surface Equal
to original Sub-Master

Rec'd
MAR 2 1911

Rec'd
MAR 23 1911

Comp. 365	10
Flock	2
Alumin Oxide Magnesium	7

3/23/1

Comp. 365 A	10
Flock	1 3/4
Strontium Sulphate	30

3/23/2

Comp. 365 A	10
Flock	1 3/4
Zox	2
Strontium Sulp.	25

Mix 2, 4 & 5 together # 3/23/3

Comp. 365 A	10
Flock	1 3/4
Strontium Carb	28

Moulds Wood-Hand

Entd
MAR 22 1911

Comp. 365A 10
Flock 1 3/4
Strontium Carbonate 25
Zoy. 2

Moulds Good # 3/24 / 1 Maximum of filler

Comp. 365A 10
Flock 1 3/4
Plumbi Per Ox Excess 22

Has Similar action as Zoc. # 3/24 / 2

Comp. 365A 10
Flock 1 3/4
Plumbi Per Ox. 16

Has Greasy feel

Expands Considerable at the last stage of mixing # 3/24 / 3 Moulds - Good

---

Has double action

Comp. 365A 10
Flock 1 3/4
Strontium Carb. 8
Plumbi Per Ox. 10

Expand at last stage of mixing # 3/24 / 4

Moulds Good Hard - Tough

Entd
MAR 22 1911

Comp. 365A 10
Flock 1 3/4
Barium Carb. 8
Plumbi Per Oxi 10

3/24 / 5

Comp. 365A 10
Flock 1 3/4
Barium Carb 8
Plumbi Per Oxi 8
Earth 2

Too Heavy with Pigment 3/24 / 6

Comp. 365A 10
#3/24 Flock 1 3/4
7 mix Barium Carb. 6
Plumbi Per Oxi 8
Earth 2

Comp. 365A 10
3/24 / 8 Flock 1 3/4
Barium Carb. 6
Plumbi Per Oxi 8
#Mix Earth 4 Try Again

Ent'd
MAR 24 1911

Comp. 365A 10
flock 13/4
Plumbi Oxi 3/24
9

Comp 365-A 10
flock 13/4
Stibium Bisulphide 28
Can carry more Stib. Bi-sulp.
about 4 parts # 3/24
10

Comp. 365 A 10
flock 13/4
Stibium Bi sulphide 10
Zoxi 5
3/24
11

Comp. 365A 10
flock 13/4
Manganese Per Oxi 21
Can carry more pigment
about 4 parts
3/24
12

Ent'd
MAR 24 1911

Comp 365 A 10
flock 13/4
Strontium Carb. 14
Manganese per Oxi 16
Looks Good too much Carb. - # 3/24
Try again 13

Comp. 365 A 10
flock 13/4
Strontium Carb 10
Manganese Per Oxi 20

ENT'D .M
MAR 25 1911

Comp. 365 A 10
Flock 1 3/4
Barytes 32
Zinc 4
Mixture Green. Insoluble Sample
3/25
1

Comp. 365 A 10
Flock 1 3/4
Barytes 25
Zinc 6
Insoluble Green
Soft
3/25
2

Comp. 365 A 10
Flock 1 3/4
Barytes 20
Zinc 8
The Zinc acts so promiscuously that the mixture must be worked Rapidly
3/25
3

ENT'D .M
MAR 25 1911

Sulphur 5
Flock 1 1/2
Antimony Pe Sulphide 10
3/25
4

Sulphur 7
Antimony Pe Sulphide 10
Flock 2
Zinc 2
3/25
5

Ent'd
MAR 27 1911

Comp. 365 A	10
flock	1½
Lead Per-Ox	8
Barytes	5 ~~#~~
Pasty enough	#3/27 1

Comp. 365 A 10
flock 1½
Lead Per Oxi 8
Barytes 10
#3/27 2

Comp 365 A 10
flock 1½
Lead per Oxide 8
Manganese Per Oxi #3/27 3 1½

Mathy 200°F Comp 365 A 10
flock 1½
Stiff Paste Lead Per Oxi 8
Manganese Per Oxi #3/27 1½
Carbon Black 4 1

Ent'd
MAR 27 1911

Comp 365 A	10
flock	1½
Strontium Carbonate	8
Mangan per Oxide	10
Lead per Oxide #3/27 5	6

Models Good Comp 365 A 10
Too Soft flock 1½
Lead per Oxi 5
Mix Barytes 5
Strontium Carbonate 5
Zox #3/27 6 2

Comp. 365 A 10
flock 1½
Fair Lead per Oxi 5
Strontium Carbonate 8
Carbon Black #3/27 7 4

Comp. 365 A 10
flock 1½
Lead per Oxide 4
Barytes 3/27 8 28

Ent'd
MAR 28 1911

Comp. 365 A 10
flock 1½
Manganese Per Ox 12
Carbon Black 4
#3/28
1

Fair — Stiff Paste

Comp. 365 10
flock 1½
Manganese Per Oxide 29
Maximum

Stiff Paste #3/28
2

Comp 365 A 10
flock 1½
Lead Per Oxide 4
Fr. Earth 6
Maximum

Stiff Paste #3/28
3

Comp. 365 A 10
flock 1½

3 batches

To Make Thick

Ent'd
MAR 28 1911

Comp 365 A 25
Flock 4
Manganese Per Oxi 30
Carbon Black 10
Maximum of filler #3/28
4

Light

3 batches

Ent'd
MAR 29 1911

Comp 365 A 20
flock 3
Manganese Per Oxide 54
#3/29
1

Comp. 365 A 15
flock 2¾
Manganese Per Oxide 18
Carbon Black 6
try later

Ent'd .M.
MAR 29 1911

Shel		8
Tetra-chlor-Nap		2
flock		1½
Z ox		1
I Earth		1
R. Stone		10
	#3/29 / 1	

Shel		8
T.C.N.		2
flock		1½
R. Stone		10
Z ox	#3/29 / 2	2
I Earth		2

Shel		10
flock		1½
R. Stone	#3/29 / 3	10
Z ox		1½
I Earth		1½

Ent'd .M.
MAR 29 1911

Shel		10
flock		1½
Barytes		24
Z ox		1½
I Earth	#3/29 / 4	1½

Shel		10
flock		1½
Manganese Per Ox		12
Carbon Black		4
	#3/29 / 5	

Ent'd .M.
MAR 30 1911

The following is a Mixture of Plastic made up for the purpose of ascertaining which will bear the greatest scratch resistance

Plain Shellac	40
flock	6
	#3/30

Ent'd .M.
MAR 31 1911

Comp. #365A	40
flock	6
	#3/31

Re. Under the same conditions this mixes with more ease, the mixture is, it spreads more. It is more liquid. Consequently could take up more filler

Ent'd .M.
MAR 31 1911

Comp 365A	20
flock	3
Barytes	50
Earth	4
Lead for Oxide	#3/31

Mixes good and not too stiff. Lead should be added after the Barytes & Earth are well incorporated

Scratches Matrix in Moulding.

Comp 365A	20
flock	3
Manganese for Oxide	50
Lead for Oxide	#3/31

Mixes Good but must be done as quick as possible because the plaster hardens on the Hot Rolls with time add the lead when the Mangan is well incorporated

Re. Mangan. little in mass - does not flow enough.

Entd .M.

APR 1 1911

Comp. #365A 10
flock 1½
Mangan. Borate 10

Cleanness before is allowed
to ~~[illegible]~~ thoroughly only. Too much mang.

#4/1
1

Comp. 365A 10
flock 1½
Mangan. Borate 7
" one part in excess

#4/1
2

Fair
Too much mang.

Entd

APR 3 1911

Comp. 365A 10
flock 1½
Mange. Borate 6

Very Tough - Cuts to a Shaving

#4/3
1

Comp. 365A 10
flock 1½
Mangan. Borate 3
Iron Oxide 12

#4/3
2

Shel 10
flock 1½
Mangan. Borate 3 3
Iron Oxide 10

#4/3

Shell 10
flock 1½
Mangan Borate 0

#4/3
4

Ent'd .M.
APR 3 1911

Comp. 365A 10
Flock 1½
Iron Oxide 20
Mixes good
Moulds Super good
Looks good #4/3
5

Comp. 365A 10
Flock 1½
Manganese Oxide 18
Mixes Good
Moulds Super
#4/3
6

Shell 10
Flock 1½
Manganese Oxide 14
With plain shellac will not take more than 14 parts of Manganese Oxide to produce a stiff plastic #4/3
7

Shell 10
Flock 1½
Iron Oxide 20
4/3
8

Ent'd .M.
APR 4 1911

Comp. 365A 10
Flock 1½
Red Lead 64
#4/4
1

Comp. 365A 10
Flock 1½
Iron Oxide (Brown) 30
#4/4
2

Comp. 365A 10
Flock 1½
Lead Sulphate 64
Soft—Chalky #4/4
3

Comp. 365A 10
Flock 1½
Lead Carbonate 64
Mixes good. Does not have tenacity.
Moulds like putty. #4/4
4
N.G. Very soft

Ent'd .M.
APR 4 1911

Comp. 365A 10
Flock 1½
Manganese Borate 25 manganese
Iron Oxide 16
Do not mix thoroughly #4/4
5

Comp. 365A 10
Flock 1½
Manganese Borate 2
Iron Oxide #4/4 20
6

Mixes with some difficulty. Does not stick to the Rolls. Stiff mixes. Mould with extra pressure.

Comp. 365 10
Flock 1½
Manganese Borate 2
Iron Oxide 16
Heat the flock & pigment before mixing. #4/4
7

Mixes good - Moulds good.
Looks good

Ent'd .M.
APR 4 1911

Comp. 365A 10
Flock Heated 1½
Manganese Borate 4
Iron Oxide Heated 16
Mix the Man. Bo. with the Comp.
Mixes good. Just the proper consistancy for good moulding.
#4/4
8

Harder & tougher than any samples yet.

It's softer than Condensite but best yet, you must increase the iron very much & get more power on your mixing roll so you can work a very much stiffer dough.

Edison

Ent'd .M.
APR 5 1911

Shellac 10
Sulphur 10
R. Rubber 1 14
#4/5
Portion of the mass crystalized

Mixture will not harden N. G.

Comp 365 A 10
flock 1/2
Manganese Borate (Heated) 4
Iron Ox. 18
#4/5
2

Mix Mangan. Bo. with Comp. then add flock (Heated)

Comp 365 A 10
flock 1/2
Mangan. Borax 4
Antimony Sulphid 4
Iron Oxide 14
#4/5
3

Stiff mass.

Ent'd .M.
APR 5 1911

Comp 365 A 10
flock 1
Mangan. Borax 4
Antimo. Sulphide 4
#4/5
4
Iron Oxide 16

When mixture becomes too stiff to operate add a very little Jump. It has the desired effect, the mixing can then go on.

Comp 365 A 5
flock 3/4
Mangan. Borax 2
Antimo Sulphid 2
Iron Oxide 12
#4/5
5

Add Jump.
Would not take all the Iron Ox and remain plastic. placed the crumbs on Steam table & would not become plastic. placed the crumbs into the mixing and applied extra pressure.
Result is not good material is not compact

Ent'd .M.
APR 5 1911

Comp. 365A		10
flock		1/2
Mangan. Borax	#4/5	4
Antimo Sulphe		4
Iron Oxide		20

Mix as follows: Comp. flock, Iron Oxi & Mang. Bor. Grind all the Borax can be taken up. add little Sulph. about 1/32 of an ounce. the mass thin works very stiff, but holds together to mould good

Ent'd .M.
APR 6 1911

Comp. 365A		10
flock		1/2
Lithophone		28

Too much Lithop. the mass crumbles on the Rolls & will not mix properly. pressed the crumbs, which are soft enough, but no tenacity.

#4/6

Comp. 365A		10
flock		1/2
Iron Oxide Heated		10
Mangan. Borate		4
Lithophone (Heated)		12

Add little Napthalene to finish the mixing 1/4 part in this Cake

Hard & Tough but Try to mould Smooth

#4/6
2

Shel		10
flock	Looks Good	1/2
Napthalene		3 1/2
Iron Oxide		10
Mangan. Bo	#4/6	4
Lithophone	3	12

Mixes good. Mould good

Looks Good

Ent'd .M.
APR 6 1911

Shel -		10
Flock		1½
Napthalene		5
Iron Oxi	#4/6	10
Mangan. Bora.	4	4
Lithofhone		16

Mixes Good. Moulds Good. ...
Mixes opposite quick, the mass dries rapidly after mixed

Shel		10
Flock		1½
Napthalene	#4/6	5
Iron Oxide	5	10
Lithofhone		28

Compound with above formula
By taking out the 4 Parts of Mangan. Bora. and adding 10 more parts of Lithofhone the mass is just as much plastic in the mixing. But it is noticeable that the mass is not quite as tenacious

Ent'd .M.
APR 6 1911

Hardest sample to date

Shel		10
Flock		1½
Napthalene	#4/6	8
Iron Oxide	6	10
I. Earth		10

Crumbles in the Rolls, there is too much Earth. placed the Crumbs in water and applied extra pressure

Ent'd .M.
APR 7 1911

Shel		10
Flock		1½
Napthalene		5
Iron Oxide		10
I Earth		6

1st Power Mixing #4/7
Works Good - better mixture 1

Shel		10
Flock		1
Napthalene		5
Iron Oxide	#4/7	14
I. Earth		6
Wet Nap. with Earth + Iron		2

Ent'd .M.
APR 7 1911

Shel		10
flock		1
Naphthalene	#4/7	6
Iron Oxide		16
I. Earth	3	6

Mainly was too Hot, which caused the Blister upon the Surface. Can carry more pigment.

Ent'd .M.
APR 8 1911

Shell		10
flock		1
Naphthalene		6
Iron Oxide	4/8	20
I. Earth	1	6

Mixes Good. must too Stiff to Mould in practice.
Mass dont resist scratch more the above formula

Shel-		5
flock		1/2
Naphthalene	#4/8	4
Iron Oxide		10
I. Earth	2	3

Mixes good. Moulds good. Looks good

Ent'd .M.
APR 8 1911

Shel		5
flock		1/2
Naphthalene		4
Iron Oxide	#4/8	10
I. Earth	3	3
Scrap		10

Mixed in 5 minutes, moulds good

For Disk Moulding

Shel		20
flock		2
Scrap		20
Iron Oxide	#4/8	40
I. Earth	4	12
Naphthalene		16

Maximum of Pigment makes Stiff Mass.

Entd
APR 10 1911

Shell 20
Flock 2
Scrap 20
Comp. Plastic #
Magnesite
Antimony
Sulphur

#4/10
1

Comp. 365A 20
Flock 2
Iron Oxide 50

#4/10
2

Made Brick - did not have enough Plastic to fill Matrix - Contains the maximum amount of Pigment. Record Surface look fair. Play 40 times

Comp 365A 10
Flock 1½
X' Non soluble Pigment 4½
Common pigment

#4/10
3

Too Soft

Entd
APR 11 1911

Shell - 17
Flock 4
Ch. Clay 5
Rotten Stone 15
K. Black ¾

#4/11
1

Surface - Very nice + moulds Easy
This is supposed to be the Reg. Brick Plastic.
Material Inventory Lists

Shell 15
Flock 4
Ch. Clay 5
Rotten Stone 15
K. Black ¾

#4/11
2

Harder + tougher than #1
moulds good

Shell 10
Flock 1½
I Earth 8½
Plumb 2

#4/11
3

Long Drying
Stiff Mass. Moulds only with Extra pressure
Does not mould compact. Hard + tough

Ent'd .M.
APR 1 1 1911

Shel 10
flock #4/11 1½
Iron Oxide 4 10
Manganese Per Oxide 15
mixes good & mottles good

Shel 10
flock #4/11 1½
Iron Oxide 5 15
Manganese Per Oxide 10
mixes good little stiffer than
then after thinning with Thinner
required 10 minutes
~~Can't notice any difference in quality~~

Shell 10
flock 1½
Aluminum Hydrate 10
" Chloride ½
Dry's very quickly and takes
a long time to retry

Ent'd .M.
APR 1 2 1911

Shel 10
flock #4/12 1 1½
Iron Oxide 8
Manganese per Oxide 10
~~Zn Oxide~~ 3
Mixing in 15 minutes, found to be
too dirty, try again 10 minutes

Shel 10
flock 1½
Iron Oxide 8
Manganese per Oxide 10
~~Zn Oxide~~ 3

Shel #4/12 5
3 ½
Manganese Acetate
Combines by ~~[illegible]~~ Dark Reddish mars
a shade Harder than Plain Shellac
Mixes with Tetra-Chlo-Nap with
Bright stirring — softens it, softer
then Plain Shellac #4/12 4
Melt in Carnauba to boiling point of Shellac
for 10 minutes

Shell 5
Tri-cresol Detate 1

Ent'd .M.
APR 12 1911

melt together to binding of Shells
Coagulates quickly then
with heat to proper state. and the
more to more bitter [illegible] resembles
as Shellac #4/12
1

Shell 5
Brown Aluminoid 1
Combine to form a mass the
Color of Tortoise Shell, porous, Hard
& Brittle, if mixed in the Rolls the
possibility only be allowed when
the pigment has dulled #4/12
6

Plain Brown Aluminoid will become
Plastic enough to take sharp impression -
It is Hard as Shellac but not as tough.

Experiments to Toughen & Harden Shellac.

Ent'd .M.
APR 13 1911

Shellac 10 parts
Cressotinic Acid 1 "
Melt in Casserole Temp. 290° #4/13
Condenses in 5 minutes! 1
As Hard as Shellac. More tenacious

Plain Shell, heated same temp will
not condense in 5 minutes.

Shellac 40 parts
Cressotinic Acid 1 "
Heated 275° 5 minutes makes
✓ Shellac not so brittle - no harder
added more Cressotinic Acid 1 "
10 min. Notice no difference in Hardness
added More Cressotinic Acid 1 "
13 min. Notice no difference in Hardness
added more Cressotinic Acid 1 "
15 min. Condenses.
Notice no difference in Hardness -

Entd M.
APR 13 1911

Shellac 20
Rosolic Acid 1
Heated to melting of Shellac
Condenses at once with
evolution of gases. produces
a mass little harder than Shellac
but more brittle

Shellac 40
Rosolic Acid 1
Melt Shell. add Rosolic 270°
does not gas as much as plain Shell.
the Sample shows to be same as plain
Shell. 10 minutes heating swells
The mass and thickens. Sample
shows slightly tougher than plain Shell.
N minutes heating the mass is too
thick to stir. The Result is a very
slight gain in toughness. but no harder.

4/13
2

Shellac 20
Hydroquinone 1
The two combines to produce a
mass little tougher than Shell. but
no harder. has the advantage of
melting more liquid than plain Shell.
Added more Hydroquinone 1 Part
which renders it still more liquid and
toughens the mass a little and loses in
hardness. Added Rosolic Acid 2 parts
Condenses at once, renders the mass
slightly more brittle and a shade softer

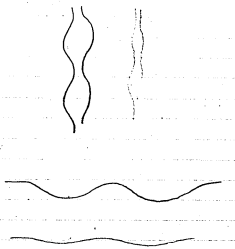
4/13
3

Ent'd .M.
APR 14 1911

Shellac 20
Phenylediamine 1
Condenses at once, swells up to make it unable to pour off.

Shellac 40
Hydroquinone 2
Phenylediamine 1

#4/14 / 1 Mixture resist scratch about the same as Shell but not so brittle, would mould good. The addition of pigments may improve the hardness.



Shellac 10
Bengal Chloride 1/2
Melt, renders Shell more liquid, Sample shows no harder, but slightly more compact, carrying less air bubble. added more Bengal Chloride 1/2 and Condenses the mass so it will not pour off.
Dont resist scratch more than Plain Shellac.

Entd M.
APR 22 1911

Coated 8 13 Blanks with Formula E.2064
Temp. at Joint was raised to 300° F. coated 2 Blank
lower Temp to 280° & Coated 6 Blank
Dope work good. As good as #365A.

Pressed 5 Record opperated
Same as with #365A Dope
Only one turned out O.K.
With more practice the
difficulties may be overcome
The blank should not be
made so hot before pressing
as the #365A. because it
cements to the matrix.
There will be Pd 4/22
1

Entd M.
APR 24 1911

Making 100 Records for
average Test.
Started coating 100 Blanks at
3.35. Temp of Dope 300° to
280°. finished at 5.15°

Entd M.
APR 25 1911

After inspection of the
Blanks found one
that will probably
not produce a good
record.
3 of them are cracked.

The Blanks were all Coated at
the rate of one per minute
Could have increased that
speed if the Dope had
melted quicker. the live
steam was blown through
night alone and could not
make it Better, But by the
addition of fresh Dope for every
Blank coated the temperature
of the Dope was kept around
280°

Entd .M.
APR 26 1911

Moulding the 100 Records
Temp. of brass 148° to 149° F.
The Blank requires to
remain therein 40 minutes
the matrices are made about
125° Hot. Place in press
apply pressure just as little
as the gauge will register for
about 10 minutes then 1400 or 1500
and right away turn on Cold air
to chill the Matrix & Record.
The Records are so moulded
at 6 to 7 minutes interval.

Expert inspection of the 100
Records shows as follows

O.K.	Blisters	Pin Holes
32	23	6

Streaks	Digs	Blind Spots
4	8	18

Cracked
9 — total 100

Entd .M.
MAY 1 1911

Altered the Moulding
Expander Device so that
the Blanks will have
end play when ready for
moulding so as to allow
for Air Escape.
Gauged all the Blanks
to equal lengths.
Coated 61 more blanks
operated same as for
lot ahead of this one.

Coated 15 Blanks that are
parallel on the bar.
The gate of the melting Pot on
the coating machine is .005
Rollers which allows "
thick coating for the first
layer. This experiment has
shown definitely that such
thickness of coating for the
first layer will produce
Blisters. The whole 15
contained Blisters.

Ent'd .M.
MAY 2 1911

Moulding Records with the 61 Blanks of yesterday.

Applied 1800 lbs pressure for the last 20 Records and the result was less defectives.

Exper inspection of the 61 Records shows as follows

O. K.	Blisters	Blind Spots
18	19	5

Dig. & Pin Holes.		
17	2	total 61

Ent'd .M
MAY 4 1911

Altered the lip of the Coating device gate to a wedge shape as follows

The object is to lay the ~~Dope more~~ uniform, particularly to prevent dragging of particles which causes streaks and pin holes just where the particle is arrested.

Entd .M.
MAY 5 1911

Coated 40 Blanks with improved coating device. The surface of all the blanks is an improvement. The wedge-shape lip of the gate does not drag the particles nearly as much as before when the gate lip was sharper.
All of the 40 Blank are as near perfect as possible to be practicle.

Moulding the above blanks.

Entd .M.
MAY 9 1911

Made Dope as follows.

Chloro-Nap- 8 parts } 5/9/11
Benzamide 1 " }
melt & pour off.

5/9/11 — 1 Part
Button Lac 3 "
Little Black aniline Color (fat)
Makes good liquid comp.
not quite so hard as # 365 A
But tough. Contains some Bubbles.
Benzamide is expensive
Coating 45 marks per kilo —

Coated 10 Blanks
with Dope made by
"Jones". Called B 3 to 1. with
Button Lac washed in Boiling
water for a considerable time.
The blanks showed no Blisters
nor was there any difficulty in
laying the Dope.

Records pressed—
The Dope was of such low—
melting point that it did
stick to the matrices so much
that a perfect record was
only accidental & such
records were too soft & pasty.

Coated 10 Blanks
with "Jones" Dope
called B 4 to 1 with
Button Lac.
Remarks for the Exp. of yesterday
apply well to this one.
Except that the Dope was a
shade harder.

Coated 10 Blanks
with "Jones" Dope
Called B 5 to 1. This Dope
is fluid enough to lay
properly. Contains some
Bubbles. (Smaller ones) which caused
Pin-Holes upon the blank Surface
and are not altogether eliminated
Records Pressed out good - only
one Blister out of the 10 Records
Surface covered with tiny Pin Holes
which showed on the Blanks -
May. 24th Inspection Shows 2 Blistered
Records, Dope Harder.

Entd M.
MAY 26 1911

Coated 10 Blanks
with Jones' Dope S. 31
Dope did not lay quite
smoothly, was too thick on after
short heating. Probably
would thicken too soon for
practical use. (try larger lot)
2 Blanks were not smoothly coated.
Records press out good.
All the Blanks were flamed.
May 24th Inspection shows
1 Blistered Record. Dope
hardened.

Entd M.
MAY 23 1911

Made 20 Records
with Jones' S. 2.5 1
Dope
Coating of the Blanks
appeared without Difficulty
Dope shows no indication
of condensing any sooner
than # 365A. The addition
of fresh quantities from
time to time keeps it
liquid enough.
All the Blanks were flamed
and the blank were wiped
off on surface paper moulding

Entd M.
MAY 24 1911

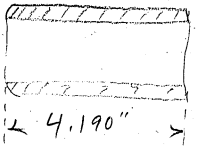
Expert Inspection
shows 3 Blistered
Records out of the 20
the Blisters are only one
on each Record and so
insignificant that Mr. Edison
stated he would pass them

Rec'd
MAY 25 1911

Made New Records by the Spinning Method in the following manner.

Pulverize #365A Dope, put into a hot matrix a sufficient quantity to form all over thin layer. The matrix is revolved to cause the Dope to lay even, in a few seconds. That is accomplished then pour in the Montana Mixture to form the Backing. When sufficiently cool the Record contract out as easily as the Pressed Record or the Regular Montana.

The Success of this method, which I've been told, has been tried by Mr Cook & others with flat failure is particularly due to manipulation. The matrix must not be made so hot to cause the Powdered Dope to cement to it, the Dope must not be made very fluid - simply enough to lay evenly with centrifugal - the centrifugal action forces the Dope on the matrix face and drives out the air - since it is lighter than the Dope. The Speed of the Matrix is an important factor, have obtained different results with different speeds to lay the powdered Dope evenly the Matrix must revolve slowly at first then every be increased, before the Dope begins to cigitating the Backing Mixture is poured in. this mixture needs be only fluid enough to run nicely - this is very promising, the only fault at present seems to be that the Dope is not pulverized fine enough - which causes a pitted surface Record -


4.190"

[ITEM FOUND IN BOOK]

Cresotinic acid & shellac

Rosolic acid instead of Shellac also in a mixture with Shellac

X Hydrochinon & Rosolic acid
Extremely hard when put
get right proportion

Rosolic acid & Paraphenylindamine
very hard when in right
proportions

X
Rosolic acid & Amidophenol

Barium Peroxide –

Ferric Oxide

Lead peroxide –

Manganese peroxide –

[ITEM FOUND IN BOOK]

Shellac + phenylacetamide

Benzyl Chloride Condensation
Shellac

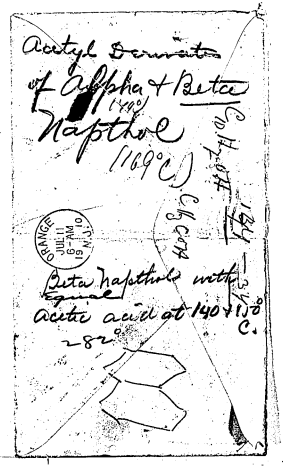
10 15c 150
1½ 3c 5
27 4c MnO2 108
39 | 263 (6.7-
234
29
4c

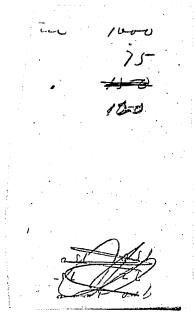
27
10
2
39

6

4 | 6.75
169
3
507

[ITEM FOUND IN BOOK]





[ITEM FOUND IN BOOK]

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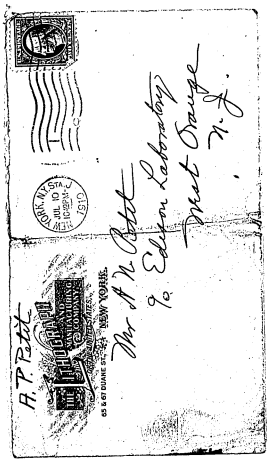

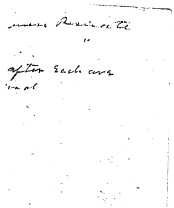

[ITEM FOUND IN BOOK]

Rosin 3 00
accounts 1 00

[ITEM FOUND IN BOOK]

Intro, 1 Machine 1000 per day
Coating 1 " 500 " "
Pressing 1 " 60 " "

To turn out 1000 records per day.
1 Lining Machine
2 Coating "
1 Pressing "

[ITEM FOUND IN BOOK]

Yellow Ozokerite 1/4
Alpha Naphthol 1/16

Ent'd M.
JAN 13 1911

Bi Chrom-Pot. 3 g
Water ~~100 g~~ 5 Pt.

Rough Coating
~~Soluble Map~~ 6 3
Z-Star 1 1/2
Shellac 16 8
Wood Pulp 1 g

Ent'd M.
JAN 20 1911

Another Batch
with 3/4 g Wood Pulp

[ITEM FOUND IN BOOK]

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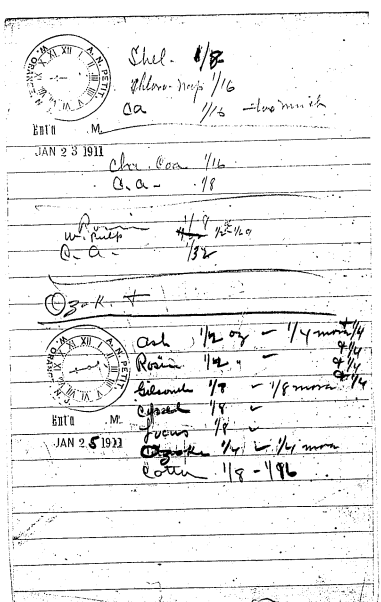


Notebook, N-11-06-01

47930
Rome Co.,
MFG. STATIONERS,
69 FULTON STREET,
NEW YORK.

029.4

Rec'd P.M. JUN 1 1911

Have found and shown to Mr Edison that the trouble of Blistered Records was due to the wax Cores having some particles of Shellac Dope which Expand after the Records are pressed. The Shellac Dope finds its way there when the Old Records are Reclaimed

Rec'd P.M. JUN 2 1911

Have received 75 new wax Cores that are free from Shellac Dope. Dressed the surface to make them all same dimention by Coating them with Montana Comp. Then Coated them with "Jones" Dope #E Fluid enough at 290°F. does not Rubble - lays well to form the Coating - must be ground finer so it may melt quicker. Coating of one

record can be done
in 20 seconds. Burnishing
Bat'd P.M. is not required – in fact
JUN 2 1911 the unpolished Blank
makes a cleaner and finer
as smooth Record.
No Air for cooling this Dope
is required, probably with
an automatic coating machine
air cooling will be necessary
to accelerate the operation.
but the Dope will have to be
Powdered finer to supply
the demand of melted Dope

Pressed 50 Records
3 of the lot developed
Bat'd P.M. blisters of large dimentions
JUN 3 1911 nothing like the old kind
the reason for them is not yet
known. 9 of the lot were perfect,
the balance were slightly imperfect
in the way of spots of wax and
small dips caused by fibre from
the cleaning rag. 13 of them were
imperfect in the wax cover –

Pressed 25 more Records
5 of the lot developed
large 13 blisters same as
Bat'd P.M. above Exp. Have found
JUN 5 1911 the cause of this to be
the Cooling to quick after pressure
is turned on. all the lot was
defective in the way of specks
or Dirt spots, smears! –

Pressed 4 records as follows —
Shaped the blanks to measure 2.150" in centre and 2.175" at each end. Rendered plastic by Heating 2 hrs. and applied 100 lb pressure for 1 minute and 1800 lb for another minute then applied the cooling jacket for another minute then let off the pressure for another minute. The Result is that the Record is perfectly pressed and contracted off of its matrix. This way means the saving of lots of time because when a greater pressure is applied the Record requires much longer time to contract out. Further more the low pressure at the beginning prevents the cracking at each end of the matrix thus allowing the air to escape with more ease.

Made Record Sample marked 6/13/11 as follows
Coated montane cylinder with alcoholic solution of Shellac — Evaporate as much alcohol as possible in heated oven 150°F for 2 hrs. & pressed Record. The Result is a beautiful surface — smooth and quite free from cracks. But too soft to be commercial. Heated another in oven for 12 hrs. & moulded marked 6/14/11. Film of Shellac is harder! looks more practical. Possibly longer heating will further improve it, try again. Mr Edison suggested some new methods of producing Records, the above is one form. Told Mr Jones of Mr Edison suggestions and he immediately coated montane blanks and I pressed them.

Made 6 Records as follows. Coated with Coating machine and with # 365A Dope mostane — Blanks a very thin layer — about 6 thousandth, then Gelatined them to penetrate any air that was imprisoned between the Blank surface & the film. after this applied the full thickness of # 365A Coating. and pressed them in the usual way.
The Blanks used for the above six were undressed, and straight Only one blister showed from the lot of undressed blanks and no blisters showed from another lot of 6 Dressed blanks with drivers test again

Ent'd P.M. JUN 14 1911

Made 45 Records with "F. Dope works good. Some trouble in preventing smear on Blank surfaces. the Moulding is O.K.
Expert inspection of this lot shows only 1 Record that is O.K. all others have tiny defects.

Ent'd P.M. JUN 17 1911

Blanks Dressed to 2.1123" in centre, when Coated is 2.1155" "

Made 12 Records with Jones F. Dope. works Good. the main fault is a smear of soft gray smeller produced when the melting pot gate is closed and the lip of the gate rests upon the surface of the Blank. Records look good and are hard enough

Ent'd P.M. JUN 24 1911

Made 12 Records with Jones B. Dope works good — more Stearate of Zinc was added to the F. Dope which produced this B. Dope — Stile get some smear when the Blank is burnished, and the Stearate of Zinc produces a softer wax. too soft to be useful

Ent'd P.M. JUN 26 1911

Made 12 Records with
H. Dope this carries
less Stearate of Zinc than
the Dope and more
than the 1/2 Records good.
when Burnished and wiped
off with muslin produces a
good Record.
Made 12 more without burnish
Could not detect any Difference
of Surface noise and are less
liable to smears.

Made with G. Dope
Record Sample
#6/7-8/11
2" put into cards
board box and box
placed in thermostat oven
temp. 120°F. to 126°.
after 6 hrs. Records were
dishyed some the surface
had become plastic enough
to cause some pin-holes
and other irregularities.

Made another lot
of Records with Jones' H
Dope. now have
definitely found that this
H. Dope does Condense much
too soon to be practical for
manufacture of Records.
20 Records in the maximum
number that can be coated
before it becomes so viscous and
rubbery that smooth coating is
no longer possible
from the time of starting the melting
of a batch when temp. is 280°F.
and not allow temp. to Rise above
300°. the Dope is condensed to
a mass like putty in 1 hr.
And when temp. is 246° at start
and not allowed to go above 262°
in one hour coating could be
done only with difficulty indicating
that a higher temp. was necessary
to make liquid enough and
higher temp. Condensed it too soon.
M.G.

Jones "#3 Dope

Ent'd P.M. Started to melt at 4.25
JUN 30 1911 with pot temp. at 260°.
at 4.35 temp. was up to 266°
at 4.48 Started to chat blanks
at 270°
with a spoon large enough
to carry just as much Dope
Powdered as required to coat
one record that quantity
was added after coating each
blanks and temp. was held
between 265 to 275 Records
good at 270. 34 Records
Blanks were coated in a
Satisfactory manner, using
air Cooling. Did look as
if the application could have
continued indefinitly.

O. K. Try Again
on larger Scale

These Blanks will be numbered
6/30/11
21

Ent'd P.M. 34 Blanks # 6/30/11 2 were
JUN 30 1911 placed in oven heated
to 140° F. at 6.00 P.M.
with object to force
evaporation and setting
of the Dope by long heating
before moulding the Record
Blanks # 6/30/11
3

Ent'd P.M. at 7.45 A.M. placed
JUL 1 1911 14 of the above blanks at
little higher temp up to 162°
in order to render plastic
enough to mould
at 1 P.M. Started to mould
The unburnished Blanks after
such long heating become glossy,

Jones "#3 Dope consists of
J. N. Shellac 22 oz
Crude Extra chlor. Naph. 10 oz
Stearate of Zinc 10 grams
Nigrit 5 grams

Heat Test

Date P.M. JUL 1 1911

One Record #7 Dope
of one " #4 Dope
was subjected to temp
of 112° to 114° F. for 48 hrs.
The Dope became soft
enough to take impression
by contact simply. But
the Record retardets up —
does leave a small percentage
of tone — Volume —

Date P.M. JUL 3 1911

Made some changes
with the Expander device
with effect to mould the
mouthe Cone at both
ends so close that only very
little reaming will suffice to
to make the Record fit the
mandrel of the Phone and
it does the trick all right.

Date P.M. JUL 5 1911

made some experiments
with Jones #3 Dope to
render it more fluid when
it is in condition for casting
Blanks, Pyrocatechin in very
small quantity works admirably
well — rendering the Dope more
fluid and seems to all go off
in the oven when heated the
blank for 12 to 18 hrs. and leaves
the Dope good and hard — But
the price of Pyrocatechin is so high
that it would be in the way of
making use of it in practice —
Have tried Benzoic Acid in
proportion of 5/10 to #3 Dope —
which makes it liquid enough
Jones suggested Camphor — in fact
several things, things would produce
the Effect. What is required is a
salt that melts at about 150° to
200° and of such nature that it
will go off from the Dope when
it is left in oven heated to 130° F.
for 12 to 18 hrs —

Ent'd P.M.
JUL 5 1911

Coated Six Blanks with Jones' #3 Dope 10 parts & Acid Benzoic in proportion of #3 Dope 10 5/16 oz of & Acid Benzoic 5/16 oz mix the Powders together and melt in Coating Machine was fluid enough at 260°

Will number these Blanks 1 5/4 Put in oven at 4.30 when temp. was 140°

#7/4/11

Ent'd P.M.
JUL 6 1911

Pressed the Six blank blanks into Records after standing in oven 18 hrs. with temp running from 140° to 160°

this morning with temp at 160° the blanks showed that the coating had become little too soft the Dope displaced itself. 160° for the last hour only may be all right but not for a long period. The Records pressed out all right requiring the pressure to be put on gradually up to 1500 for 1 1/4 minutes then apply the coating jacket for 3/4 minute when the pressure may be turned off and Record extracted.

The Dope shows to be little too soft although it stands well at high temperature probably 1/4 oz of Benzoic Acid to 1 oz of #3 Dope would be better

---

Experiments to Render the Dope more fluid for Coating

Jones #3 Dope 10 parts
Phenol Trichloride 1 "
Sample #1
Heat 270° fluid

Jones #3 Dope 10 parts
Phenol trichloride 1 "
Sample #2
Heat

Put Sample #1 in oven
at 3:15 P.M. Heat temp. 140°
" 5:10 " " " 142
Next morning at 8:00 A.M. 148°
After 37 hrs. Heating Granular Structure
Little Soft

Sample #2 in oven
at 3:45 P.M. Heat temp 140°
" 5:10 " " " 142°
Next morning at 8:00 A.M. " " 148

Dope Samples

22/32 J. M. Lac (unboiled)

10/32 Tetra chlor-naf. (unreacted)

1/128 Violet

1/32 Trichloride Phenol

Melt Tetra add Shellac (Bulwinol) and
Violet in mixed - keep temp below 270
and finally no higher than 274 add
the Phenol stir well & pour off

Will Number Sample #3

Dope Samples #4

Entd P.M. J.N. Shellac 20 Part 10/20
JUL 6 1911 Violet Color 1/128 "
Trichlor-Phenol 2 " 1/128
1/128

Heat 270° very short moment at 276° at finish
Makes good looking mass Hard
+ Tough. try more Phenol
Noticeable that the mass is free from
Smear. Some Bya Crystals labouts up
in mass underblock

after 23 heating in oven has faint smell of Phenol - Harder than #5

Sample #5

J.N. Shellac	10 Parts
Violet	1/128 "
Trichlor Phenol	2 "
Naphthalene	1/4 "

Heat same as above
Sample is more pliable + soft than above #4
There is absence of free crystals of bya.

After 22 hrs. heating in oven has faint smell of Phenol — Hard + Tough
little Plastic - Celluloid-like

Sample #6

J.N. Shellac 10 parts
Entd Violet 1/128 "
JUL 7 Trichlor Phenol 3 "
Dissolve the Color in Phenol first
Heat to 266° becomes liquid enough
free from Smears
lots of Pin Holes
little soft + Rubbery about
Same as #5 after 22 hrs Heating
Tough + Harder than #4 - Free from Smear. Some pin holes

Sample #7

J.N. Shellac	10 Parts
Tetrachlor Naph.	2 "
Trichlor Phenol	1
Violet	1/128

Heat to 264° Liquid enough
Fewer Pin holes than #6
Harder than #6
Sets quicker
Some traces of Smears

after 22 hrs heating has little odor of Phenol — is tough - not free from Smears
Some Pin holes - looks fair

8 A.M. 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 P.M.
8 10 P.M.
JUL 7 1921

Sample # 8

I-N-Shellac	10 Parts
Tetra-chlor-Nap-	2 "
Naphthalene	1 "
Purple dyes	1/128 "

Liquid enough only when at 180°
Melt first the Tetra-chlor-Naps with the Plain Naphthalene & the Color, a thick mass adheres to the slides which dont dissolve.
Some Smears & Pin Holes Pretty Tough mass after 14 hrs heating. Smears & Pin holes are Slick there, Granular Structure - Hard & Tough

Sample # 9

I-N-Shellac	10 parts
Tetra-Chlor-Nap-	3 "
Monobromated Camphor	1/2 "
Color Purple	1/128

Some Smears & Pin Holes
The Color adheres to the slides when first melted with the Tetra - dont dissolve
does not look very promising
after 14 hrs Heating
Hard & Tough after 14 hrs heating
Some Smears

Sample # 10

I-N-Shellac	10 Parts
Tetra chlor-Nap-	2 "
Naphthalene	1 "
Blue Dyes	1/128 "

This Sample is to test difference between Purple & Blue Color
The Blue dissolves instantly and acts upon the mass to render it more fluid at 160°
Then the Purple at 180°. There is too much Color.
Sample shows less Smears & Pin holes than #8
after heating shows Granular Structure, fine layed Smears

Sample # 11

I-N-Shellac	10 parts
Tetra chlor-Nap-	3
Camphor	1
Blue Color	1/128

Mixes Good - liquid at 275°
Some Smears but fairly distributed
Nearly free from Pin Holes
Pretty Hard & Tough as soon as cold
Smears & Pin Holes are about the Same as in #10
Mass is Very tough - But little too plastic
#10 is more plastic than #11 or 12

Hr'd P.M.
JUL 7 1911

Sample # 12

J. N. Shellac	10 parts
Tetra. Chlor. Naph.	4 "
Trichloride Phenol	1/2 "
Camphor	1/2 "

Melts good. Very liquid at 270°.
Sets quick enough
Smears & Pin Holes about the same as in # 10 — 11
Toughness about same as #11.
Unfilled Coat good.

Sample # 13

J. N. Shellac	10 Parts
Tetra-chlor-Naph	3 "
Naphthalene	1/2 "
Camphor	1/2 "

Melts & mixes good
temp 270 the highest
Some Smears & Pin Holes
Sets quick enough pretty Hard & tough
After 48 hrs. in Oven to Evaporate Solvent temp 148 to 158° — too Soft —
After 84 hrs. a Shade Harder

Plastic at 96°

Hr'd P.M.
JUL 8 1911

Sample # 14

J. N. Shellac	10 Parts
Trichlor Phenol	3 "
Victoria Blue	1/128 "

Melt Phenol with Color and Pulverized Shellac gradually, temp no higher than 164°. Fluid enough to filter at 160°
Samples are not free from Pin Holes.
Mass is fairly Hard as soon as Cool —
Too much Color
After 48 hrs in oven at 148 to 158° to Evaporate Solvent — too Plastic
After 84 hrs, a Shade Harder

Sample # 15 — Very Plastic at 96°

J. N. Shellac	10 Parts
Trichlor Phenol	4 "
Victoria Blue	1/128 "

Operates Same as above # 14
As soon as Cool it is not so hard as # 14 But much freer from Pin Holes.
A Sample of this dope 24 hrs after made and exposed to 96° Temp is Very Plastic Enough to mould Record. the addition of Paraformaldehyde hardens it Some. See #16 (After 48 hrs. in Oven temp 148 to 158°. too plastic. But Patent Leather finish

Plastic at 96°

Sample #16

	T. N. Shellac	10 Parts
	Trichlor-Phenol	3 "
	Paraformaldehyde	1 "
	Blue Color	— 1/128

Melt Phenol with aldehyde
Ebulition takes place, and seems that a crystal is formed that does not melt –
Add the Shellac with the Blue Color gradually at 140° it begins to Bubble and Heat is generated; care has to be taken as the temp will not Rise above 180°. is pretty thick at that temp. cool down to 160° the Bubbles flatten down. When Cold the mass is quite hard and some flexible of plastic quality – harder than #15
A Sample of the above ~~tope~~ 24 hrs. after made and Exposed to 96° Heat is plastic enough to mould Record But the Paraformaldehyde has the effect of rendering the Compound harder than #115 – See of

After 48 hrs in oven a Shade ~~Harder than~~ #15
After 84 hrs

Very Plastic at 96°

Sample # 17

	T. N. Shellac	10 Parts
	Trichloride Phenol	4 "
	Para formaldehyde	1/2 "
	Victoria Blue	— 1/128

Melt Phenol with formaldehyde – some crystals show undissolved or new ones are formed which does not dissolve at that temp. add the Victoria Blue Put Filter off – there is only a very small proportion that remains in the filter perhaps 1/4 of 1% –
Now there is 3 1/2 parts of this mixture Melt this and add Shellac 10 parts becomes very fluid at 125° and could be filtered at that temp provided it is done just as soon as the Shellac is thoroughly dissolved. I noticed that as the temp. Rises from 125° the mass thickens and very little heat is required to Raise the temp in fact it rises bring off the flame for a time. Temp of this Sample did not Rise above 140°.
The mass as soon as Cold is more plastic than #14 + 16 and a shade less than #15

BATH P.M.
JUL 1 0 1911

Solvent mixture

Ice flask —

Trichlor-Phenol 1 oz
Paraformaldehyde 1/4 oz

#1 leaves 1/4 oz by Evaporation

Trichlor-Phenol 1 oz
Paraformaldehyde 3/8 oz.
leaves 3/8 oz by Evaporation.

#2

Shows few clear spots in Result

Trichlor-Phenol 1 oz
Paraformaldehyde 7/16 oz
leaves 7/16 oz by Evaporation
Shows less clear Crystals

#3

Trichlor-Phenol 1 oz
Paraformaldehyde 5/16

Shows some clear Spots less than #2 But more than #3

#4

Trichlor-Phenol 1 oz
Paraformaldehyde 3/8 oz
Rosalic acid 1/16 "

no clear Spots - a liquid exudes from the Salt after it has set.
does not look Good

Sample #18

J. N. Shellac 10 Parts
#2 Solvent mixture 3
Temp. was higher than 152°. could filter.
Does not set hard as soon as cool
Very Rubbery Plastic after 48 hrs. in open.
little harder after 36 hrs in Oven 154°

#19

J. N. Shellac 10 Parts
#2 Solvent mixture 6
Very liquid at 140° could filter
not higher than 152°
Does not set Hard as quickly as #18 — Will not harden after 48 hrs. in open after than #18

#20

J. N. Shellac 10
Tetra Chlor. Naf. 3
#2 Solvent mixture 1
Tetra & Solvent mixes good
Liquid enough to filter at 260°
little too plastic after 36 hrs. in Oven 154°
try again with less tetra---

#21

J. N. Shellac 10
Tetra Chlor-Naf. 4
#2 Solvent mixture 1/2
Liquid enough to filter at 250° to 260°
little Sunbeam. Fairly Hard & Tough.
Very few Pin Holes
Looks Good
After 36 hrs in Oven 154° not so plastic as #20 try again

#22

Same as above #21 with addition of — 1/125 of Victoria Blue - Melt the Tetra & the #2 Solvent & the Color together let Solution settle down then add Shellac.
~~Left~~ when Cold is Colored Green - Some Sunbeam & few Pin Holes
Believe the Sunbeam begin to show up when the temp is Raised above 250°. this was up to 166°

Ent'd P.M.
JUL 10 1911

Sample # 23

J. N. Shellac	10
Tetrachlor-Naph	4

Solvent Mixtures

Tetra-chlor-Naph	10 Parts
Benzoic Acid	1/2 "
Zinc acetate	1 "

Heat up to 425° about 1/2 hr.

#5

Tetra chlor-Naph	10
Zinc acetate	1
Pyrogalic Acid	1/4

Temp. 275°

Pyrogalic acid clears the mixture and ~~hardens~~ it -
Would not all dissolve add
Boracic Acid 1/4
Would not all dissolve
filter - quite some muck over - #6

Ent'd P.M.
JUL 11 1911

Sample 24

J. N. Shellac	10 Parts
Tetra-chlor-Naph	3 "
Phenol tribromatac	1/2 "

Blue Color — 1/128

Temp 282°

Fluid enough to filter at 270°
Hardens quick

Solvent Mixtures

Tetra-Chlor-Naph	10
Picric Acid	½
Antimony Sulphide	

M. G.

Tetra-Chlor-Naph	10
Zinc Acetate	1
Benzamide	1

#7

Tetra Chlor-Naph	10
Zinc Acetate	1
Parachlor Benzol	1

#8

Tetra chlor-Naph	10
Zinc Acetate	1
Benzamide	½

Not clear Solution filter

#9

Ent'd P.M.
JUL 11 1911

Solvent Mixtures

Tetra-Chlor-Naph	10
Paraamidophenol	½
Zinc Acetate	1

a Residue that wont dissolve

#10 M. G.

Tetra-Chlor-Naph	10
Trichlor Phenol	1
Paraamidophenol	½

M. G.

Sample #25

#5 Solvent Mixture	4
Shellac	10

Little Blue Color

Ent'd P.M.
JUL 11 1911

Phthalic Acid 1 Part
T. N. Shellac 1 3/16 to 1/14 "
are the best proportions
Producing a mass that crystalizes in about 1 hr. when butter 1/8 inch thick is poured and is fairly tough & dry —

11th

#1

Tetra-chl-Naps 8 parts
Phenol-Resin 4 "
Temp. 325°

#2

Tetra-C-N- 8 parts
Phenol-R 8 "
Temp. 350°

#3

Tetra-Chl-Naps- 8 parts
Phenol-R- 12 "
Temp- 350°

Tetra chl-Naps 8
Phenol-R- 16
Temp- 350°

#5

Tetra-chl-Naps 8
Phenol-R. 20
Temp. 350°

#6

Tetra chlor-Naps 8
Phenol-R- 24
Temp-270

11th

#7

Tetra chlor-Naps- 8 parts
Phenol-R- 24 "
Benzoic acid 1 "
temp 280°

#8

Tetra-chlor-naps- 8 parts
Phenol-R- 24 "
Benzoic acid 2 "
temp. 160°

#9

Tetra chlor-Naps- 8 parts
Phenol-R- 24 "
Benzoic acid 4 "
temp 250°

#13

#6 1 Part
Camphor 1/4 "
Shellac 1/2 "

#14

#5 1 Part
Camphor 1/4 "

#15

#5 1 Part
Camphor 1/2

#16

#5 — 1 Part
Resorcine 1/4 "
Clear, Beautiful, Pink-cream - little soft

#17

#4 — 1 1/4 Part
Resorcine 1/4 "
Brittle - little sticky

#18

#4 — 1 1/4
Shellac — 1 "

#19

Zitra — 8 parts
Phenol - R - 12 "

12th Sample #20

#4 — 8 parts
Sample #16 — 6 "
Hard - But too Brittle

#20 x

Oleamide — 1 Part
#5 — 3 "
Clear Mass - Brittle

12th

#20 xx

Zitra-chlor-Naps — 1 Part
Oleamide — 1 "
add another — 1 "
the addition of Oleamide reduces the mass to a soft stickymass

#24

#19 — 8 Parts
Anchusin - alkanin 1/4 "
Tacky - Its tenacity

#26

Zitra-chlor-Naps — 1 Part
Reclaimed Rubber — 1 "
Shell — 1 "

#27

Zitra-chlor-Naps — 1 Part
R. R. Rex — 1 "
Zinc acetic — 1/64 "
Shell — 1 "

12th #28

Tetra chlor. Naph. 1 Part
R. R. Rex 1 "
Shellac 1/2 "

temp 290°

Hard but brittle

add more Shell - less brittle

" " " temp 325°

Very little Smear - not enough tenacity. little soft

#29

Tetra-chlor-Naph. 1 Part
Phenol-R 1 "
Shell 4 "

fluid enough at 325°

Hard — Brittle

add 1/128 part of aniline Black

12th #30

Tetra-chlor-Naph 1 Part
Phenol-R 1 "
Shell 5 "

temp 325°

Brittle - no tenacity

add fat aniline Black

less Brittle

#31

Tetrachlor-Naph - 1 Part
Phenol-R 1 "
Shell 6 "

liquid enough - no Smear

very few Pin-holes

add fat aniline Black

less brittle

12th

32

Tetra-chlor-Naph 8 parts
Phenol-R 16 "
Castor oil-acid 1 "

little Sticky

33

Tetra-chlor-Naph 8 parts
Phenol-R 16 "
Castor oil acid 4 "
very liquid
more sticky

34

Tetra-chlor-Naph 8 parts
Phenol-R 16 "
Phthalic acid 2

Bitter - little sticky

#8#

34

#20xx 1 Part
Shell 3 "

35

Shellac 10
Phenol R
Tetra-chlor. Phenol 4
Victoria Blue 1/32
temp 325°

fluid enough, Jew-waxy Spots
Run temp to 360°
Does not condense
very fluid

36

Shellac 6 Parts
Tetra-chlor-Naph 1 "
Phenol-R 1 "
Jet auxiliid 1/32
temp 325°.

136 #37

Shellac	20 Parts
Tetra chlor-naph	6 "
Phenol-R	1 "
Purple Color	1/16 "
Phthalic acid	1/8 "

temp. 300°

less Smear

" Pin Holes

" Brittle then #37

#39

Shell	21 Parts
Tetra-chlor-naph	7
Phenol-R	1
Phthalic acid	1/2
Purple Color	1/16

temp 300° to 320°

more Smear & Pin holes when higher heating

136 #41

Tetra chlor-naph	1 Part
Phenol-R	1 "
Shell	4 "
Phthalic acid	1/16 "
Victoria Blue	1/32 "

310° Heat

Very little Smear

Few Pin holes

#42

Tetra-chlor-naph	1 Parts
Mono-chlor-Toluol	1/4 "
Phenol-R	1 "
Victoria Blue	1/32 "
Shell	4

temp 300°

add more Toluol makes Extra liquid

Resulting mass is Right

13th

#43

Tetra-chlor-naph	1 Part
Phenol R.	3/4 "
Nitro chlor Toluol	1/2 "
Violet Color	1/128 "
Shellac	5 —

Not So Brittle as #42
Leaves Smears
Leaves Bubbles

#44

	Parts
Tetra-chlor-naph	1 1/4
Phenol-R	3/4 "
Nitro-Toluol	1/4 "
Victoria Blue	1/64 "
Shell	5 —

Extra fluid at 300°
Can stand for more Shell
Very Hard & Tough
more horny than #45

13th

#45

Tetra chlor naph	1 Part
Phenol-R	3/8 "
Nitro Toluol	1/8 "
Victoria Blue	1/64
Shell	6 "

temp up to 340°
thin enough to filter
Harder than #44

#46

Tetra-chlor-naph	1
Phenol R	3/4
Nitro Toluene	1/8
Victoria Blue	1/128
Shellac	5 —

More Brittle than #45
no Smears no Pin Holes

13th

47

Tetra chlor-nap.	1 Part
Phenol-R	3/4 "
Nitro Toluene	1/8 "
Shell	5

Melt tetra - Phenol - + Toluene when temp is 300° add Shell little by little raise temp to 320° - this allows the mixture to keep fluid as soon as the last Shell has been added Raise temp to 340° fluid enough to filter

Very Hard - clear - tough almost free from smears & Pinn-Holes & Blisters looks O.K

at 114° heat it softens enough to make impression

48

Tetra chlor-nap	1 Part
Phenol. R	3/4 "
Nitrotoluene	1/8"
Shellac	5 "

49

Tetra - chlor-nap.	1 Part
Phenol-R	3/4 "
Benz Phenol	1/8 "
Shell	4 1/2 "

50

Tetra - Chlor-nap -	1 Part
Phenol-R.	3/4 "
~~Dinitrophenol~~	1/8 "
Shell	5

not liquid enough at 325°

14th #51

Titan-chlor-Naph.	1 Part
Phenol-R.	3/4 "
Phthalic Acid	1/8 "
Victoria Blue	1/32 "
Shellac	1/2 "

temp 300°

Some Bubbles

#52

Titan chlor-Naph.	1 Part
Phenol R.	1 "
Mono-chlor-Toluene	1/2 "
Victoria Blue	1/32 "
Shellac	1/2 "

14th #53

Titan chlor-Naph	1 Part
Phenol-R	3/4 "
Mono-chlor-Toluene	1/2
Victoria Blue	1/64 "
Shellac	1/4

Temp 300 to 320°

Very Hard - quite tough

Not much Smears

Some Blow Holes

#54

Titan chlor-Naph.	1 Part
Phenol-Resin	1 "
Mono-chlor-Toluol	1 "
Victoria Blue	1/64
Melt + add Shellac	5 "

14th #55

Amyl Acetate	1/2 Part
Ethyl R.	1 "
Mono-chlor Toluol	1 "
Shellac	5 "

much too Soft

#56

Repeated #44 with the addition of little Victoria Blue was very fluid at 318°
quite free from Bubbles

14th #57

Mono-chlor Toluol	1 Part
Ethyl-R.	1 "
Amyl acetate	1/4 "
Shellac	4

Very Good Sample
try this on Cylinder
is little Plastic but
May evaporate amyl-
acetate by baking
the blanks

14th #58

Mono-chlor-Tolual	1 Part
Tetra-chlor-Nap	1/4 "
Phenol-R	1/4 "
Amyl Acetate	1/4 "
Shell	1/2

Shows up Smears — no doubt due to the addition of the Tetra-Nap

#59

Monochlor Tolual	1
Phenol R.	1
Shell	2

Pretty fair Mass
Little Smears
add Nitro-Benzole and it immediately very fluid and eliminates the Smears
But makes mass Elastic
Addition of more Shellac makes more brilliant & compact

14th #60

Phenol R	1 Parts
Mono-chlor Tolual	1/4 "
Nitro Benzole	1/16 "
Shell	2 "

Very Hard & Clear — But too Brittle addition of more Benzol makes too soft 120° temp.

#61

Phenol R	1
Mono-chlor Tolual	1/2
Nitro Benzole	1/2
Shell	3

Too Soft

62

Phenol R.	1 Part
Mono-chlor-Tolunol	1/4 "
Nitro Benzole	1/2 "
Shell	3

Temp. 280° Very liquid
Some Bubbles

63

Phenol R.	3/4
Mono-chlor-Tolunol	1/4
Nitro Benzol	1/8 "
Shell	2

Temp 300 -

64

Phenol R.	1 Part
Mono-chlor-Tolunol	1/2
Nitro Benzol	1/8 "
Shell	2

Victoria Blue
liquid at 300°

65

Phenol R	1 Part
Mono-chlor Tolunol	1/2 "
Nitro Benzol	3/16
Shell	2

Melt to Boiling - add Shell
in very small quantities
temp 320° Very liquid

Does not soften at 120°

try another with
more Benzo

Ent'd P.M.
JUL 17 1911

#66

Phenol-Resin	1 Part
Mono-chlor-Benzol	1/2 "
Dinitrobenzol	1/4 "
Shellac	1 "

Melt the first 3. boil about 3 minutes add Shellac
Indicator Temp - 300°. Jerk
(Bubbles - liquid enough
Result. Very little Smear - Flows - Looks Hard - but little

67

Phenol-Resin	1 Part
Mono-chlor-Benzol	1/2 "
Dinitrobenzol	1/2 "
Shellac	2 "

Mix Same as above
Result - Too plastic - No tenacity.

68

Dinitrobenzol	1
Balata	1/4
Shellac	?

Temp. 300° to 320°
Very pronounced mass - try again

Ent'd P.M.
JUL 17 1911

Nitronaphthalene	1 Part
Balata	1/4 "
Shellac	4 "
" another	1 "

Looks good. Very liquid all through in all proportions of Shellac.
Result. a tough Hard mass the nature of which is that it can be indented with a point if pressure is applied slowly but will chip off if applied quickly. Seems not to have quite enough tenacity. Looks fair No Smears - No Bubbles - Very liquid

70

Nitronaphthalene	1 Part
Balata	1/4 "
Shellac	5 "

Same as 69 except that this is made in less time the Shellac being added as soon as it melted
Result - Same as #69.

71

Nitronaphthalene 1 Part
Balata 1/8 "
Shellac 1/8 "

8 P.M. JUL 17 1911

Melt & bring to Boil — then add Shellac 4 "
Temp. 300° Liquid enough for Bubbles.

Result. When set cold is plastic enough for finger nail mark But cuts like horn — is tenacious enough — Make Harder

72

Dinitrobenzol 1 Part
Balata 1/8 "
Dissolves - but not quite as fine as with the Nitronaphthalene

73

Dinitrobenzol 1 Part
Balata 1/2 "
Shellac 3
Very Liquid

8 P.M. JUL 17 1911

Result Rubbery mass —

74

Nitrochlorbenzol 1 Part
Balata 1/2 "
Shellac 3 "

Result — too Soft Plastic —

73

Dinitrobenzol 1 Part
Balata 1/8 "
Shellac ?
add Shellac until it is liquid enough when temp. is 300° F.
Looks good —

75

Nitronaphthalene 1 Part
Balata 1/2 "
Shellac 5 "
was Very liquid when the 5 parts of Shellac was added so added another part of Shellac the sample was still too plastic added more shellac until 13 parts were added and could be used to coat them if filtered, think that 10 parts would be about as much as possible to filter —

Cold Solution Records #1
not numbered

Rec'd P.M.
JUL 27 1911

Pressed 7 Records for Mr Edison which were Montana Blanks coated over with alcohol — Shellac Solution, the Blanks so coated looked nice & glossy when first coated — when they had been in oven temp 114 to 120° for 1 hour they began to show pits — pin holes and tiny blisters! pressed on Record after 3 hrs. heating

Result — the Blank coating was not flat. it did show some Pit-like depressions — due to the coating displacing itself during the course of evaporating the Solvent. these Pit-like depressions could be noticed upon the pressed Records, otherwise the Record pressed as nicely as any with Hot Dope coatings. Left 1 of the Blanks in the oven all night, temp 114 to

#1

120° and then pressed them into records, which all turned out good — no blisters — no dents — no Blind-spots. no smears — no fibre marks

Result the Records so made look very good and could be made in practice — further test required —

Cold Solution Records #1

Rec'd P.M.
JUL 28 1911

4 more blanks were in oven at 114° to 120° for 48 hrs. and placed in oven at 140 to 150° for 14 hrs. more and then running pressed —

Remark the Blanks were not coated smoothly — after all the seasoning the coating did not improve — there was Pin-holes & tiny Blisters all over — the coating did not lay flat,

Result — Blind Spots & Pitted on all four Records — But films is tougher and adheres to Montana better. Matrices were 140° Hot, Blanks same —

#2

Received 24 13 Blanks
Coated with Cold Solution
Placed them in Oven
at 10.00 a.m. Temp. 90°
" 11.00 " " 100°
" 12.00 M. " 120°
" 1.00 P.M. " 124°

Blank Coating looks just as glossy
as when filled put in oven
at 2. P.M. Temp. - 132°
Blanks begin to show some
tiny blisters
at 2.30 Pressed 4 Records
will number #2A.
at 4.00 Temp. - 132°
at 5.00 " 142°
at 5.45 Pressed 4 Records
will number #2B
Left Blanks in oven over night temp.
between 132° & 12°
at 10.00 A.M. temp 122° at 11.00 temp 140°
Pressed 4 Records will number #2C
at 4.30 Temp 150° Matrices temp 150°
Pressed 5 Records will No 2D & 1 Special.
Coated with Purified Shellac will No 2DD

See page XX three sheets over →

Sample #76

Nitronaphthalene	1 Bott
R. R. Rex.	1/4"
Shellac	5"

Melt the 1st two to boiling
then add Shell gradually
Temp 290°
Melt 1st two to boiling and allow
to clear of Bubbles then add Shell
Result Too Soft at 110°

#77

Too Soft at 110° Temp.

Nitronaphthalene	1 Bott
R. R. R	3/8"
Shellac	7"

Temp - up to 325°
would filter
Sample looks good try to coat Blanks

	Nitronaphthalene	1 Bott
Remarks.	Shellac - Semi Plastic & Resilient	1 "
	" Semi Natural little harder	1 "
	"	1 "
	" Cut some left from	1 "
	" begins to with grain tones	1 "
	" Best for Records	1 "
	"	1 "
	"	1 #78

#19

Dinitronaphthalene 1 Part
Shellac 1 "
Sets quick to Hard
brittle mass
Shellac — another 1 "
Hard & a shade plastic
Shell — another 1 "
Harder & a shade plastic
Shell — another 1 "
Harder & a shade plastic

As compared with Plain Shellac it is not so hard and not so brittle as Plain Shellac —
4 Parts Shellac is all that will go in the temp is 330° when it is fluid enough to filter

The Mononitronaphthalene seems to be the better of the two diseases it dissolves more Shellac and consequently a tougher mass
One advantage with the dinitro is that the mixture is hard and set as soon as cold.

Ent'd P.M. JUL 19 1911

#3

Received 6 Blanks Coated with Cold Solution as follows: 1st coat is with Pyridine addition to the Shellac Solution, then 4 coats of plain Shellac solution in alcohol put in Oven at 2.15 P.M. Temp 1.70 — at 5.30. Temp. 130°
See page AX13 bottom →

Ent'd P.M. JUL 19 1911

at 8.15. temp 138°
at 9.00 " 142° pressed
three Records — will number #3
Moulded a Record with matrix as hot as 140° and another with the same matrix 110° hot, the latter Record showed a more glossy surface and just as perfect in every other respect therefore 115 to 120° Heat for the Matrices will be Right lower than 115 the Blank becomes chilled before the Record impression is fully moulded.
The Blanks after 48 hrs in Oven require higher temp than one for only a few hrs. 140° the lowest 160° highest

Ent'd P.M. JUL 20 1911

Entd P.M.
JUL 19 1911

#80

Phenol tribromated | Part
Shellac (Gummy) | 1 "
" (cuts and bounds) | 1 "
" (begins to show brittleness) | 1 "
" (limit of shellac. Hard enough - little plastic and little Stell " Too much. Bubbles & brittle. But very fine | 1 "

Glossy Compact Mass. Very much like Plain Shellac in toughness & hardness. After investigating the cost of Phenol tribromated and the price to be billed $5.00 per 2 1/2 lbs.

#81

Nitronaphthalene | 1
R. R. Rex | 1/2
Stell | 6

82

Nitronaphthalene | 1/2
Di " " | 1/2
R. R. Rex | 1/2
Shellac | 6

83

Nitronaphthalene | 1
Di " " | 1/2
Shellac | 6

Temp. 300°. Liquid enough.
Result, Mass is too soft. Cuts like horn if very thin chip is cut, but cutting deep it breaks away. it will bend if pressure is applied slowly, but abruptly it will break. Quite some blow holes. Has surface of good quality - Celluloid-like.

Page XX

#2

Ent'd P.M. JUL 20 1911

at 8.15 a.m. Temp. 138°
at 10.00 " " 152°
Pressed 5 Records — one with Matrix about 140°. Hot the other Iron about 110° " the lower Heated matrices produced Records with a considerable mon gloss than with the hotter Matrix. The magnifying glass shows that the lower heated matrices did chill the Blank coating before a full impression of the Record was made therefore 110° Hot for the matrix is not enough.
This lot of 5 Records will #2 E

21st at 9. a.m. Temp 148°
at 10.30 " " 142°
Pressed two last Records of this lot the matrices were 140°
the first Blank pressed which was 142° cracked open, was not Plastic enough — And the Record impression is not quite Sharpe. Will number #2 F
The last Blank temp 160° Matrix 140°
Record Moulded perfectly. Will No. #2 EF

When last two have been in Oven 70 hours.

#4

Ent'd P.M. JUL 20 1911

1st Coat Flamed Blanks
6 Blanks coated by G. Ott let stand in open air 4 hrs. then Heated over flame
Will number #4
finished Coated 4 placed in oven at P.M.

21st a 8.15 a.m. Temp - 148°
at 1.P.M " " 160°
Matrix temp 140°
Pressed one Record. Looks Perfect #4

Pressed another. Blank temp 165 - #4A
Matrix 140° Good Record

3.P.M. Pressed another Blank 165
Matrix 140° Good Record #4B

Pressed another. Blank 165°
Matrix 140° Good Record #4.C

Pressed other Blank 165°
Matrix 140° Good Record #4.H

Pressed last Blank 165°
Matrix 140° #4E

Page A X

Continued — 6-Pyridine Coated —

Pressed one Record. temp of Blank 150° —— temp of Matrix 150°

Blank was kepted heated for 45 hours at temps ranging from 120° to 150°.

Result — Record has full sharp impression But the Surface is Matte. will Number # 3 A

The pyridine 1st Coat does not fix it to the Mostane.

Pressed another — Blank temp 155°

Matrix temp 130°

Result. Sharp impression on one End, the tittle end Record not quite sharp will number # 3 B

Pressed the last blank temp 160°

Matrix 140°. will No # 3 C

#5

4-Carbon Tetrachlor First Coat — Put in oven at P.M. 20th temp 130°

Pressed first Record at 1. P.M

temp 165° Matrix temp 140° #5

Pressed another Blank temp 170°

Matrix temp 140° —— #5A

Blank was hotter at the large end

The tittle end Record impression is not quite sharpe

Pressed another Blank temp 152° #5B

Matrix 132°

Blank was hotter at large end — was altogether too Cold. it cracked in Expanding

at 2.30 Blank temp 170°

Matrix " 130° #5C

Pressed Record - Tittle end of the Record is not pressed sharp Due to Matrix being too Cold

#6

Ent'd P.M.
JUL 22 1911

13 Blanks coated in
Regular way. last Coat
Just finished —
Placed in oven temp. 140°
at 12 M. temp. 152°
at 2 P.M temp 160°
Pressed 1st Record with #6
at 2.30 temp 162°
Pressed another — #6A
at 3.00 temp 160°
Pressed another #6B
at 4.00 temp 162
Pressed another #6C
at 4.30 temp - 165° #6D
at 5.00 temp 160 #6E

Ent'd P.M.
JUL 24 1911

at 8.00 a.m. temp. 120° Closed
Room of oven to Room temp. 165°
Note the Blank at 120° Hot is
Hard enough to be self sustaining.
and at that temp. a record would not
distory itself.
at 11.00 a.m. moulded 9 Records
with the above Blank which Remained
Hot 24 hours at 150° to 165° and
24 hours at 150° to 165°. All of the

Blanks pressed good with the
matrices at 140° to 150° Hot
Have noticed that when a blank
has been heated only 24 hours
it may be moulded at a lower
temp. than when the Blank has
been heated 48 hours —
the 9 Records mentioned in this
item will be numbered #6 H

Have noticed that the chilling
of the record must not be
applied too early after the
pressure has been turn on fully
because the film of lac will
not adhear to the montane
core in spots. after the
pressure has been turned on
it must remain at least 1/2 minute
before the cooling jackets are
applied

Mr Edison gave me instructions
to Stop moulding for the time being
and Get up the Rehoard pressing Plant
in #4 Building for a Capacity of
1000 Records Per day

Hnt'd P.M.
JUL 26 1911

These Blanks were coated last night

11 Blanks made from new Mould — they measure across the Centre after Varnished 2.147" — Remark — it was intended that they should be larger than that.

Put in Oven at 9 a.m. at 9.45 Temp was 150°
Started to press the Records at 11 P.M. Temp. of Blanks 160°
Temp. of matrix 150°
will Number #7

One Blank coated this morning — Colored purple
will Number #7.A

One Blank Coated this morning Colored with Oil Black D.247 Will No #7B

Showed Al. Biermann a sketch and explained a new method of applying Varnish to Montana Blanks by means of spraying with atomizer

Hnt'd P.M.
AUG 1 1911

Remark —
Aside from the lac Varnish not sticking to the Montana base or Cylinder — the lac Varnish when dried forms a very brittle film — when the finished record is droped upon a hard sharp brass the lac film will peel off

If the film was tougher it would not crack open to peel off so the record would thereby be improved —

The film should be made more tenacious without destroying its hardness — it must not be plastic materially —

To remedy will undertake to incorporate Gum Elemi with the regular lac Varnish. tried to dissolve Elemi with the same Alcohol that dissolves the Shellac — Dont obtain a clear sol.

Entd P.M.
AUG 2 1911

Manila Elemi 10g
Melt and bring to
boil temp 350° for
about 5 minutes then
turn into Cold water
to form small tears; the
result is a clear gum
During the boiling a peculiar
odor is given off smelling
sour like acetic or citric acid

Some of the above treated
gum in same alcohol
as used for shellac form
a turbid mass of white
lumps + flakes that floats
to about 1/8 the whole
Evaporating some of the
clear solution forms a
film that is not at all clear
and gathers in blotches

Mix some of this clear sol.
with lac Varnish causes
the Varnish to dry uneven
— crinkled

Entd P.M.
AUG 3 1911

Tried Alcohol-Elemi
Solution with the
addition of Sul. Ether
only a smaller percentage
of Ether will cause all the
floating white substance
to dissolve — but evaporating
this solution upon glass
a clear film is not obtained

Adding some to regular lac
Varnish makes the whole Varnish
turbid and will not dry out
smooth.

Amyl Acetate added to
lac Varnish does mix to
produce a clear film
but does not harden
quick enough. Probably
a very small quantity will
toughen the lac Varnish some
but may reduce its hardness.

Ent'd P.M.
AUG 4 1911

Made solution of J. N. Lac in Amyl-alcohol - let stand until well dissolved this seems to dissolve pretty much all the lac -

Ent'd P.M.
AUG 5 1911

Mixed fused Mexican Elemi with Amyl alcohol let stand until well dissolved

Ent'd P.M.
AUG 18 1911

Since the date during the ~~Hum~~ drum dry ~~fitting~~ up de Rosa provided field for in #24 Building - plans Rosa's of pressure [illegible] Fritz as pressure [illegible] to press in one press on the changed with a blank and [illegible] time on and time off and discharge [illegible] time of 25 seconds [illegible] 60 numbers [illegible] total of 85 seconds. This is is sufficiently slow enough to be keeped up throughout the day -

AUG 23 1911 P.M.

Coated 12 Blanks with Pyroxline solution in Ab. W. alcohol (Coopers) as follows.

12 Shellac coated Blanks same as used for Records at present, applied a coating of the above solution with a brush when Blank was about blood-heat and placed in oven at 90° for 14 hrs. and then carried to pressing plant - put in oven at 140° for 1.15 minutes and pressed with matrices at 140° and 112 to 113 lbs pressure - pressure turned on rises in 30 seconds - and 1½ minute pressure then apply cold for 2 minutes & extract - looks very good

Records will be numbered

#8-23-11

AUG 22 1911 P.M.

Coated 24 Blanks (Shellac coated) same as Regulars - with Pyroxline solution same as yesterday - put in oven at 90° for 24 hrs. then transferred to pressing Oven Heated to 150° and moulded after 1½ hr heating - some of the blanks became too Hot and crinkled some of the film coating.

There will be numbered

#8-24-11

Result - Surface smoother than Plain lac - But not enough to be remarkable as a very decided improvement. the Record surface is more Brilliant - shiny - looks better as a finished article

Mr. Elsworth reported to me that the lac Record would not stand the 110° F. test. He mentioned that the Record flattened after having been subjected to that temperature several times of 1 hour intervals - that is one hour at 110° and 1 hour normal temp.

Dr. Leda reported to me that the lac Record was flattened at 110° F. Also that the Record wears well had played one over 900 times.

Mr. Elsworth told me he was to have ~~mixed and~~ make a sample of wax of higher melting point with object to overcome the heat test difficulty

Pressed 16 Records with blanks measuring - when cold - 2.163" Dia. at large end. Instead of Regular blanks which measured 2.150" - The larger blanks show to be an improvement to the surface - the resulting Record surface is smoother. In practice that Diameter blank is too large. most of this lot had to be forced into the matrix to locate them - So ordered 15 new moulds made of master wax cylinders 2.178" Dia. at large end. there will shrink .007" in the process of electro-plating. Expect to have moulds that will measure 2.171"

Coated 24 Hardened Montana cylinders. Made moulds. 2.185" with peroxidene solution - one coating - See next page for next operation -

Ent'd P.M.
AUG 30 1911

Pressed Records with Elworth's mixture of Montanc to Raise melting point Blanks were coated with lac solution same as has been produced. Dried in oven 130° temp. about 20 hours then placed in oven 160° to 168° in 50 minutes the Blanks are as soft as would be practical to use. The pressure was 1500 lb for 1 minute then applied the cooling for 1½ minute — the Result was that the largest percentage of the Records came out of the Matrices with the film of lac loosened from the base — some portion would slider off.

Showed the Result to Mr Byer He sent for Mr Elsworth. From him the suggestion came to give the Blank a first layer of Balata solution then apply the lac coatings

Ent'd P.M.
AUG 30 1911

Applied Second Coating of Pyroxeline solution to the 24 Blanks started yesterday. Noticed that the first coating after drying 20 hrs. normal temperature the Surface was Rough — Enough so that the hand could feel the small particles therefore gave the blanks a Rubbing with cloth before applying the 2nd Coat.

2 hrs. later applied another Coat.

Coated 12 Blank with mixture of Pyroxeline Solution 25%
Shellac solution 75%

Ent'd

Coated 12 Blanks with mixture of Pyroxeline Solution 20%
Lac Solution 80%

Ent'd
SEP 11 1911

SEP 11 1911

After several Experiments for pressing Records have found that the troublesome film break is due to the blank being to cold — not Plastic enough — to render the film of shellac soft enough to mould or stretch — it breaks open instead of stretching to fill the mould — if the mould is too cold when the blank is sufficiently Hot enough — the same trouble happens — as soon as the film touches the cold mould the film of lac chills and breaks open.

I have over come the film brake by heating the moulds to 160° to 170° and the blank in oven temp 170° to 180° — With this method another trouble appears that is air spots. I find that the air spots are caused by the film of lac sticking to the Hot matrix so much that it does not allow the air to escape — the High spots of the blank naturally touching the matrix before the low spots the air in the low spots are consequently imprisoned —

To over come this defect a Higher melting Varnish must be found or a Varnish of such nature that it will not stick to the Hot mould enough to prevent the air from passing out.

Entd ... Moulded a tray of Records
SEP 12 1911 made by giving the Regular
Blanks a finish coat of
9/8/11 Varnish & # 9/11/11
the blank Surface looks
Very good - no bubbles and no
streaks.
Inspection of the above lot of
Records showed a much higher
percentage of O.K. Records
than when Shellac only is
used for the film coating.
But the smoothness is not
all that is desired ... and they
do not stand the high temp-
- test according to Feder —

Entd ... gave Daly some Rosalie
SEP 15 1911 Acid with my experience
in using it with shellac.
told him that it was soluble
in alcohol and should
mix with the lac to raise
the melting point and also to
render the shellac more
permanent and harder —

Entd ... Received 4 of the new
SEP 16 1911 Rubber Expanders - the
Change made was simply
thickening of the wall at
lower end and a projecting lip
also at the lower end for the
purpose of better holding the
Expander in proper position -
The thickening of the wall is
intended to allow expansion
or inflation at the middle
much sooner to compel the
air to be squeezed out from
between the blank Record & the
Matrix

Entd ... Made Varnish of Pyroxylene
SEP 18 1911 & Rosalie Acid mixes
Very good - produces a
clear film of good quality
which does not melt at 325° F.
But becomes sufficiently plastic
to mould, the more Rosalie
added the more Brittle the
film becomes

Entd
SEP 1 8 1911

Pressed 1 tray of Blanks prepared in the usual way having 3 Coats of Shellac Varnish and after the last coat was applied and dried for Half. I applied another Coat of Varnish #9/18/11 The Records present out fine without air Spots nor film-brakes. this is the Second time I have tested the moulding quality of Blank having a top layer or Coat of Pyroxeline Solution and it absolutely prevents air spots — Due to the fact that the pyroxeline does not stick to the Hot matrix.

Entd
SEP 25 1911

Ordered Some Blank from Fred Ott Coated as follows — Spray Varnish upon Mouldine cylinders one Coat and put in drying Room for one day & Spray another Coat and put into drying Room again for one day and repeat again the next day. The object is to allow each Coat to thoroughly dry before the application of another.

Found that Varnished blank having dried for 6 or 7 days will mould with less air-spots than when the Blanks have dried only 1 or 2 days probably due to the fact that the Solvent is more thoroughly evaporated and is less sticky to the mould when pressing —

Entd
SEP 26 1911

pressed more Blanks into Records which blanks were coated over the Regular lac Coatings and to finish coating of Pyroxilene solution the Result was again that no air spots shown on these Records. No doubt due to the fact that the pyroxilene does not stick to the Hot matrix

Ordered some more blanks with a finish coat of pyroxilene

Entd
SEP 27 1911

Pressed Records Blanks made of 5 coats hand brush #1 Varnish Montana Corks from moulds 2-17-9 — Dryed 6-7-8-12 days. Matrix temp. 160° to 170° — softening oven 165° to 172° Pressure 1300 lbs Raised from 10 to 15 seconds — 3½ minutes Hot pressure & 1 m. Cooling 15 seconds for changing & 15 " for Discharging making total of 5 minutes per Records percentage of O.K. Eye Inspec. " " " " Phon-Tel

Ent'd ... SEP 28 1911

Experiment of Sand papering the Varnished Blanks after Varnish is thoroughly dryed

Blanks from Thoulds #.170

#1 Varnished 5 Coats — in drying Room — Sand papered on this date with #1 Glint paper —

One sheet of sand paper will do for 10 Blanks

And 10 Blank may be polished in 5 minutes

On Sept 29th a.m. applied one Coat #1 Varnish with Hand Brush & put in drying Room.

Ent'd ... OCT 3 1 1911

A.P.1. Prime Coat Blank

Benzole	6 Parts	1 Part
Rosin	2 "	
Acetone	6 Parts	1 Part
Reg. amb. wax Copal	1 Part	

Regular amb. wax # A.P. 2

Benzol - Rosin same as above		1/3 Part
Acetone - Copal " "		2/3 "

A.P. 3

Acetone - Copal add about 1/8 Benzole

Entd
NOV 24 1911

	Parts
Shellac	40
Rosin	10
Copal	20
Manila Elemi	5
Accroid	10

Melt & boil for 10 minutes
4 Pans of
Chill Sunburst mixture # 11-24-11
1

try to dissolve # 11-24-11 in Ab. W. Alc.
1
Does not make clear Solution

Denatured Alcohol	2 Parts
Benzol	2 "
Acetone	1 "

To dissolve # 11-24-11
1

Entd
NOV 27 1911

Raw Mountain Wax	3 parts
Elemite	1 "

Good Soft Cutting wax.

Entd
NOV 28 1911

	Parts
Montan (Raw)	700
Rosin	200

Melt & Raise temp to 500° & filter
V2

Entd
NOV 29 1911

Montan (Raw)	1000
Rosin (Dark)	500
Beeswax	250
Impregnated Earth	200

V3

Entd
DEC 1 1911

Montan (Raw)	700
Rosin (Dark)	200
Other Beeswax	100
Impregnated Earth	75

V4

Ent'd
DEC 2 1911

Rosin (Dark 300
Gilsonite 100
Montan (crude) 1000
Inf. Earth 150
V5 more - 50

Ent'd
DEC 2 1911

Take # V3 1000
add Montan 1000
Inf. Earth 50

V6

Take # V6 1000
Montan 1000
Inf. Earth 100
V7

Dark Rosin 300

Ent'd
DEC 4 1911

Ent'd
DEC 5 1911

V7 — 1000 Parts
Inf. Earth
Will # V8

Ent'd
DEC 6 1911

Raw Montan
Boiled & filtered
Temp about 350° F.

V9

Raw Montan 10 Parts
Dark Cork Dust 3 "
Mixes with some parts light enough to float and some Heavy enough to sink. Product is a mass with no more flexibility than plain Montan

Ent'd
DEC 6 1911

Montan (Crude) 50 0
Accroids 10 0
Rosin 5 0
Only 25 parts of accroids to one mixed
#V10

Montan 50 0
Accroids 10 0
Rosin 5 0
Inf. Earth 10 0

#V12

Montan 10 0
Gum Elemi 1 0
Hardens the Montan a very
Considerable
try more Elemi

Montan 10 0
Elemi 2 0

Ent'd
DEC 8 1911

4 mi Wax 10 0
D. Rosin (Boiled) 3 0
Flock 8
Chalk 2 0
Earth (Infusorial) 6
#M2

Ent'd
DEC 11 1911

4 mi Wax 10 0 0
D. Rosin 8 0 0
Flock 7 0
Chalk 2 0 0
Infusorial Earth 6 0
#M3

Ent'd P.M.
DEC 12 1911

Raw Montan 50 0
Dark Rosin 30 0
Raise temp to 500°
for 15 minutes - add
4 mi Wax 50 0
Flock 7 0
Chalk 2 0 0
Infuso. Earth 6 0

#M4

Ent'd P.M.
DEC 13 1911

Raw Montan	400
Rosin (Dark)	400
4 mi Wax	400
flock	70
chalk	200
Infusso-Earth	60

M. 5

Ent'd P.M.
DEC 14 1911

Raw Montan	400
Rosin	300
4 mi Wax	400
flock	70
chalk	250
Infusso-Earth	50

M. 6

Dodd's Montan	300
flock	24
chalk	50

M. 7

Ent'd P.M.
DEC 15 1911

Dodd's Montan	1000
flock	75
Infusorial Earth	170

M 8

Dodd's Montan	600
flock	20
Magnesium Carbonate	40

M. 9 M.G. Carbonate Don't mix good the mass is Mealy

Dodd's Montan	2000
flock (new)	60

M 10

Above mix	666
Rotten Stone	100

M 11

Rec'd P.M.
DEC 18 1911

#M10 — 666
Chalk 100
Earth 30

#M12

#M10 — 666
Talk -200

#M13 Mixt. Pin Holes & does not mix well —

Dodd Montan 500
Flock (new), 15
P. Paris 250

#M14

Dodds Montan 500
Flock (new) 17½
P. Paris 160
Infusi-Earth 40

#M15

Rec'd P.M.
DEC 18 1911

Rosin 1 Part
Gilsonite 1 "
Melt to 450° & Pour off

Rosin-Gilsonit
"

Rec'd P.M.
DEC 18 1911

Dodd's Montan 500
Rosin-Gilsonit 50
Flock (new) 18
P. Paris 160
Infusor-Earth 40

#M16

Dodd Montan 500
Rosin-Gilsonit 50
Flock 16
P. Paris 200
Inf. Earth 24

#M17

Acetic Acid. Dowlras #365 Compound
Shell-ethra-chlor-naf. + Zn

Ent'd P.M.
DEC 20 1911

Dodd's Mountain 700
Rosin 200
Flock 25
Chalk 175

#M 18

Ent'd P.M.
DEC 21 1911

Dodd's Mountain 500
Rosin

Rec'd P.M.
JUN 6 1912

6-5-12

observations concerning shellac.

Rec'd P.M.
JUN 6 1912

Of all the samples tried have found a similarity of product.

One sample may be more easily dissolved than another and may melt at lower temperature

My reason for this difference is that the more easily soluble sample is younger than the less soluble - the same applies to its melting point. as the lac ages it looses its volatile matter, which in fact is the component part of the lac that attacks the Resin & gum when heated or when alcohol or similar liquids is added
(should read "the solvent ability of shellac.")

Another Reason. Shellac is not always stored under the same atmospheric conditions - a dry atmosphere will draw the volatile matter of the shellac sooner than in damp or moist.

I have taken from the same package shellac (quality, Orange) from one

side of the bag which would fuse or melt under the same treatment as a portion taken from the opposite side of the bag. the portion that would not melt or fuse was acted on through that side of the bag had been exposed to the sun or heat and soften it enough to become plastic enough to run together -

Another Reason - Reasons given concerning the gathering of lac and the subsequent treatment is not uniformly manipulated - Judging from the material employed it seems impossible that all the shellac produced, even by the same manipulator, should have the same melting point or solubility. Mr Rogers of Rogers Pyatt shellac ~~important~~ shellac importers - told me that the method, as he saw it performed in India, to form the thin shells with the lac is carried on by placing the lac gum in large bag made of cotton cloth, the bag is held in front of fire place, the heat melts the gum enough to flow through the cotton into a heated container to keep it liquid or molten - the operator takes a ladle full of the molten lac and pours it over a revolving cylinder. while another operator spreads the gum over the surface of the cylinder with a suitable spreader. Now then: when the lac is pouring over the fire place, the outermost portion necessarily receives more heat than the innermost - consequently the outer portion has been deprived of more volatile matter and is less soluble and higher melting point. then again the lac which is in the heated container the portion which adheres to the sides and bottom nearest to heat will exhaust its volatile matter sooner than the other portion, so we have again a

Sent from the Central Pennsylvania Varnish Works proof for 19 pt. white shellac & Spirit only
By Stanley Wright 1/21/26

mixed shellac not of uniform melting point or solubility though the samples may analyze the same

All shellacs may become insoluble and infusible by depriving it of its volatile constituents either by slow or rapid process -

Shellac will become plastic in contact with heated substances, it becomes molten in contact with any fusible organic salts or compounds and fixed oils. it becomes more or less liquid in alcohol and most all light oily liquids such as fusel oil amyl acetate wood oil - in the cold & more liquid with heat.

Shellac is miscible with any hard dry powdered material - the latter simply acts as a filler to stiffen and produce a harder & tougher mass - Zinc Oxide for instance will stiffen the lac when only a small quantity is used and Infusorial Earth will enter into much larger quantity - with Zinc the pasty mass sets very Hard quickly - with the Earth, sets slowly and softer. probably due to the gravity nature of the Earth —— the Zinc probably combines with certain ingredients of the lac - it seems true because the shellac color turns to Brick - If a Nickel salt is used the Color of the lac turns green - which shows evidence of some combination - Such mixtures are usually made between steam heated Rolls which melts the lac and intermalgamates in the Dry Powders.

Mixtures of shellac with organic salt of whatever nature the resulting mass shows evidence of the salt by its fracture - stability - sensitiveness to heat & moisture - toughness & smoothness.

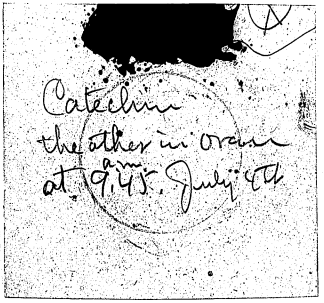
I melt naphthalene - add shellac at 200° F. naphthalene begins to sublime shellac melts therein - if not stired the shellac stays to the bottom and will there coagulate - let the temperature rise slowly to 280° the lac is disturbed by the boiling of the naphthalene which becomes darker - the lac seems to disorganize to form flocks which rises in the naphthalene the flocks gradually break up into smaller particles so that the mixture looks to be a pretty compact mass - this goes on without stiring of course and having naphthalene in excess simply to possess the solvent power of the naphthalene - if a piece of glass into it which takes a sample it crystalizes hard fibrous & scaly - color brown - at 300° lac examination shows the lac to be simply floating in fine divided state - allow the mixture — to cool down slowly - the lac drops some of the naphthalene comes to the surface but carries with something of the shellac because when cool the crystals are yellowish and not so brittle - the shellac when cold show it has taken some of the naphthalene which does not separate by slow cooling - on reheating more naphthalene comes to the surface - but the slightest motion of the mixture combines the two so that it is difficult to pour off the floating naphthalene.

Melt common fine Rosin at 220° the shellac is added melts slowly - floats and is full of Bubbles - at 280° some of the Bubbles break up and some of the shellac drops after the heating at 280-300° a portion of the Shellac which floats becomes less possible - seperate from the rest as a glassy-like mass shrink up - and no more seems to come up. the mixture is now not clear it looks like as if Rosin and a very fine Powder floating was

the result - a sample upon glass
shows after cooling that the mixture
is not so brittle (brittlest) as Rosin and not
so hard & tough as shellac
the sample seems to form when
cold a compact clear mass -
tried Borax in the mixture to
give it a good glassing quality
but was immediately coagulated
the mass to a gelatine-like
which would not become liquid
after 1½ hr. heating - add more Rosin
makes little more liquid but
coagulated lumps remains -

[ITEM FOUND IN BOOK]

[ITEM FOUND IN BOOK]

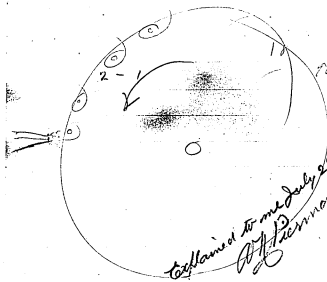


[ITEM FOUND IN BOOK]

ENT'D P.M.

JUL 24 1911

Shrinkage lines on this cloth



Explained to me July 29-1911
A H Dennison

Air Brush
— Method of applying Varnish Coating to Record Blanks

[ITEM FOUND IN BOOK]

Sulphate Barium (Barigatia)
Silicium Carbonate — Sulph. hot
~~Asbestos powder~~
Aluminium Hydrate
Iron Oxide
Lead Sesquioxide

[ITEM FOUND IN BOOK]

✓ Benzonaphtol

Quinidine

Triacetyl-hydroquinone

✓ Acetanilide

✓ Benzophenol

[ITEM FOUND IN BOOK]

✓ Nitrotoluol (Para)

✓ Paraformaldehyde -

Nitroanisol para

✓ Beta naphtol

✓ Alphanaphtol

✓ Phenanthren

✓ Nitrophenol

✓ Camphor,

✓ Monobromocamphor

✗ Resorcin

[ITEM FOUND IN BOOK]

Mix. Shellac 5g tetra.

28

Orthotoluol Sulphamide	2 hrs	
Paraphenylendiamine	8 "	
Benzidin	2 "	44
Nitraniline para pure	5 "	
Metatoluylendiamine	11 "	
Tolidin Para	5 "	45
Dichloraniline coml	2	52
Naphthylamine Beta	6	30
Acet Para Phenyl[illegible]	2	35
Naphtylamin Alpha	1.2	
Orthotoluolsulphamide	2	45
Hydroquinone Diacetyl	6	
Dinitronaphtalen Pure	2	
Ortho Amidophenol	2	30
Diphenylamine cp	7	55
Napthol alpha Recryst mud	3	48
Paranisidin	3	
Parachloroaniline	6	40
Cinchonidine Benzoate	3	54

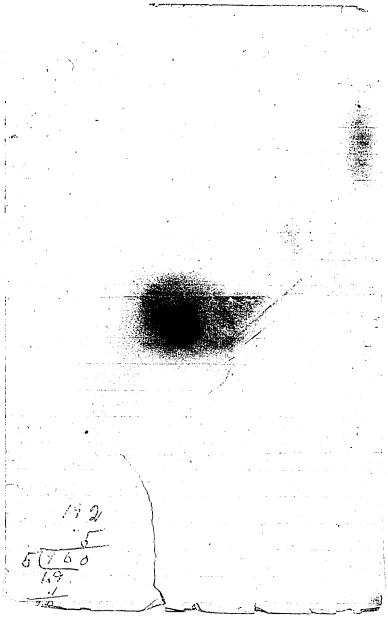
[ITEM FOUND IN BOOK]

2 g

Benz Chinon	3.55
Orthonitroparaphenetidin	6
Phenacetine	5.45
Tolidin Base	4
Dichloraniline Coul - 1g.	3
Naphthamine Beta 1g	8
Methacetin 1g	5

[ITEM FOUND IN BOOK]

[ON BACK OF PRECEDING PAGE]



Notebook, N-10-09-29

Book # 1
Hard Record Blank
Experiments

Rome Co.,
MFG. STATIONERS,
69 FULTON STREET,
NEW YORK.
45008

029.4

Edison Laboratory

Petit =

I want to get a very hard recording record, work on celluloid + Tetrachlorethylene same as we used for veneer, but mixed with Extra Tetrachloroethylene or something else that will soften it so we can cut it with recording sapphire + also turn it off smooth by taking very light cuts —

(7)

Ent'd P.M.
JAN 3 1912

Recieved from Lancaster
8 lbs of Tetrachlor Naphthalene "
recently made - which he
called "Regular"

The Shellac used in the
following experiments is
the T. N. quality ~~Except where Cited~~
Fahrenheit Thermometer used —
#1

Tetra Chlor Naph. 5 parts
Lac 5 "
Temp. 270°. Pour off at 270° time 1 m.
Result. Tough but structure not fine
enough - Stylus cuts - but groove
is Rough - looks gritty.
Have Sample

This Sample is not Colored Red
All other Samples that contain
some Stearate of Zinc are colored

Rec'd P.M.
JAN 4 1912

#2

	Parts
Tetra-cl-Nap-	10
Lac	3

Heated gently up to 300°
poured off to cool. the Shellac
separated from the tetra-cl-Nap-
Repeated the same proportions of
above, with addition of Zinc Stearate
and a coherent mixture is the Result
This is the 2nd time same has been proven-
The resulting mass is gummy- and
soft enough to be dented with slight pressure

No Sample

Rec'd P.M.
JAN 4 1912

Tried to make record
on the Phono- with blank
made in Sept- 1910- of
#365A Dope. the Stylus
slipped over the Blank
Surface and cutting —
intermittently, a groove of even
depth was not possible —
The Stylus was slipped off almost
at the Start, Examined the Blank
Surface and found particles —
Emit etc - which shows that the
Dope must be filtered more thoroughly —

Entd P.M.
JAN 5 1912

Tetra-Cl-Nap will not filter through Shamoi skin

#3

Tetra Cl-Nap.	10
Stera-Zinc	2
Shel	20

Melt the first two raise temp to 300° add Shellac gradually stirring briskly all the time - when all Shel - has been added and temp is 300° Pour off -
Result is good mixture - Coherent & slightly Elastic - tough - But Contains a large quantity of air holes Hair Sample

#4

Tetra-Cl-Nap	10
Stera Zinc	1½
Shell	20

Made same as #3
Result - a shade lighter - little more wax separates.
No other noticeable difference
Just as many air holes Hair Sample

Ent'd P.M.
JAN 5 1912

#5

Tetra-Cl-Nap	10
Stearic Zinc	1
Shellac	20

Made same as #3

Result. a shade lighter than #4

More wave separates and more air holes than sample #4

This sample is softer than #6 which is the same formula except the quality of shellac

#6

Tetra.Cl-Nap	10
Stearic Zinc	1
25# Shellac	20

Made same as #3

a shade lighter than #5 — Proof that there is a difference between the 25# and the 7.M. shellac

#7 — This is same as Old #365A

Tetra.Cl. Nap	15
Stearic Zinc	1/2
Shellac	15

The Color of this sample is Red and the #8 which is the old #365 Dope is Brown

Rec'd P.M.
JAN 5 1912

#8

Some old #365A Dope remelted and poured off for comparison with the same formula to-day for the purpose of testing out the present quality of Tetra-Cl-Naps and Shellac (The color of this is Brown to #7 is Red and is the same formula except quality of Lac

#9

Tetra-Cl-Naps	5
Stearic Acid	1/2
T. N. Shellac	15

Same formula as #7 the only difference in the quality of Shellac The Sample is clearer

Rec'd P.M.
JAN 5 1912

#10.

Letra - Al - Nap - 5-
Stera - Amine 1/2

J.N. Shellac that has
been Dissolved in Denatured alcohol
and filtered through paper and
afterward Condensed by distillation
and finally drawn the last traces
of alcohol by means of putting
the soft Shellac in water and
force steam into the water - 15 Parts

Full of pin holes - Hard & tough
The formula is same as #9
the Sample is a Shade darker -
Hardness & toughness Pin holes
show the same as #9 except
on the tops of the button which
shows a considerable more blisters

during the making some smell
of alcohol was noticeable.

Rec'd P.M.
JAN 5 1912

#11

Tetra-Cl. Nap 5
Stera Zinc 3
N.M. Lac 7

Many Blow Holes — More gummy than #12

#12

Tetra Cl. Nap — 5
Stera Zinc 4
Shellac — 10

Cuts very chip — But dry — Some air holes — Try to break air holes by making mixture thinner Fairs

#13

Same as above with addition of Nitrotoluol —
N.S. Nitrotoluol expands on cooling also creates few bubbles — renders the mass mealy + soft

6 01 P.M.
JAN 8 1912

Judging from the above samples it seems that another material must be found which will eliminate the gaming or blistering of the Compound Tetra-il-naph + Ethell - that material must be of a nature that will not make the product mealy nor sticky -

The following experiments are for the purpose of finding a fusing material that will melt Nitrated Cotton
The ingredients which will melt Cotton are
Camphor Mono-bromated
Monoalphanitronaphthalene
Nitrato-lucol (Para)

PM
JAN 9 1916

Soluble Cotton dissolved in Hot monobromonaphthalene - Camphor - shows up a semi-transparent mass of waxy nature but tough - after 48 hours the same sample has disintegrated to a mealy - or granny mass much softer than when first made.

Synthetic Camphor melted and Soluble Cotton dissolved therein produces a soft Rubbery mass

Soluble Cotton dissolved into melted Nitronaphthalene produces a Soft Rubbery - mass

Soluble Cotton dissolved into melted Nitrotoluol produces a Soft Rubbery mass

Rec'd P.M.
JAN 15 1912

Made up Iodides with Dopes as follows

Potin Cl. Nap.	100
Zinc Stearate	10
R+P Extra Stearine	200

Liquid enough to pour
Solid blanket and hard
enough for purpose – But
contains Bubbles or air Bubbles –

Up to the present have observed
that Stearine melted with any
Solid Iodide produces
gas bubbles – which may be
detected even when the
mixtures are Hot to any
degree of temperature – and
upon Cooling the mixtures
the gas does not all escape
the setting of the Dopes so
impressions the bubbles
which is of course unfit
for Record Surfaces

2-28-12

Remelted Blank made from formula opposite ——→ and added Stearic and little Synthetic Camphor until nearly all the gaming was removed & Poured into Mould through filter of 3 thicknesses of Record wrapper Cotton & then chilled into Ice water – the blank was little difficult coming out of the mould –

Result – Structure – not Compact is homogeneous & does not shave with ease –

Ent'd P.M.
JAN 16 1912

Made splender with Dope as follows

Stearic Acid	100
Synthetic Camphor	20
R.& P Extra Shellac	230

Temp 260°

1-16-12

Remelted

Ent'd P.M.
JAN 17 1912

Stear. acid	100
Syn. Camphor	10
Roger + Pay'ts Extra Shellac	250

Temp. 220 to 240 for 1 hr.
Stirring most of the time.
Just before pouring Blank
Raise temp to 270°

1-17-12
/

Rec'd
P.M.
JAN 13 1918

Boil Stearic acid with Zinc-metal for about 8 hrs. or until the cooling and setting of it becomes translucent or semi-transparent. Will call this Zinc-Stearic

Melted Zinc-Stearic 1 Part
Tetra-Cl. Nap- 1 "
Little quinn Damar only
Enough to allow the Stearic & Nafta to crystalize on cooling
Makes a mass that cuts
Brilliant surface and smooth
Probably a good soft cutting
Mass Step-Wax

Rec'd P.M.
JAN 19 1912

Zinc — Stearic 50
Tetra Cl. Naph 75
R.T.P. Extra Stearic 175

Melt first two. Raise temp. 260°
add ½ of the Stearic stir briskly
all the time, as soon as melted
add Balance of Stearic and
Stir and when temp is up
to 260° Pour off in Hot mould
let stand few minutes to set —
then Put Cold water to it the
blank will leave the mould —
then put Bunsen burner flame
inside of the Core and it will
soon leave the blank also —

1-19-12
1

Rec'd P.M.
JAN 19 1917

Zinc Stirrer	60
Intra el. Mop.	60
R. & P. Stellar	175

Melt 1st two and Raise temp. 300° add about 1/2 of the lac stir briskly - when melted add balance of lac and keep on stirring - when temp is up to 260° Pour off into Hot Mould - when Set put into Cold water to harden -

1-19-12
2

Ent'd P.M.
JAN 19 1912

Zinc - Steric	75
Tetra - Cl - Naps	50
R. & P. Extra Lac	175

hot made

Ent'd P.M.
JAN 19 1912

Steric	50
Tetra Cl. Naps.	75
R & P Extra S. lac	175

Temp. 260°
#1-19-12
4

Steric	50
Tetra - Cl. Naps -	75
R. & P. S. lac	200

Sample Temp. 260°
#1-19-12
5

Moulded Blank

Temp. maintained around 240° added
S. lac gradually

Ent'd P.M.
JAN 19 1912

Stearin	5-0
Tetra Cl. Nap	75
R & P. S. Lac	1 50

1-19-12
6

Stearin	5-0
Tetra Cl. Nap	75
R & P. S. Lac	125

1-19-12
7

Stearin	5 0
Tetra. Cl. Nap	75
R & P S Lac	10 0

Temp. 280° for first two - last - 230°

1-19-12
8

Rec'd P.M.
JAN 19 1912

Stearin	50
Tetra Ch. Naph	75
R + P. Slac	75

Temp. 280° for first two
" 220° for last

1-19-12
9

This Sample shows an excess of Stear + Tetra

Stearin	50
Tetra Ch. Naph	75
Locus Gum	20
R + P Slac	125

1-19-12
10

Produces a mass of pretty close structure and of fair cutting quality little more gummy than # 1-19-12 the latter is tougher and not brittle, but contains air bubbles

Entd P.M
JAN 22 1918

Synthetic Camphor 1 Part
Syrian asphaltum 1 "

Produces Soft tarry mass

Stearine 1 Part
Syrian asphaltum 1 "

Waxy mass – cryptalms

Tetra Cl. Naf. 1 Part
Syrian Asphaltum 1 "

Tarry mass – Bubbles
fine structure

Paraffine 1 Part
Syrian asphaltum 1 "

Waxy mass – tarry structure
~~Does~~ not mix good

Ent'd P.M.
JAN 22 1918

Carnauba Wax 1 Part
Syrian asphaltum 1 "

Dry - waxy mass - Brittle
closer grain than Plain
Carnauba

Shellac Wax 1 Part
Syrian asphaltum 1 "

fine grain waxy mass
but not enough tenacious
Hardness about same as
Regular Edison Master Wax

Ent'd P.M.
JAN 2 1918

Japan Wax 1 Part
Syrian asphaltum 1 "

finest grain structure of
this Series - cools with
a gloss on surface -
But too soft - is sticky when
held between fingers a few
moments - try more asphaltum

Entd. P.M.
JAN 23 1918

Carnauba wax	1 Part
Japan "	1 "
Tetrachl. Nap	1 "
Syrian Asphaltum	3 "

Too Gummy - Structure coarse
Offers much resistance to cutting
chip and sticks to edge

Japan Wax	1 Part
Syrian Asphaltum	3 "
Shellac	2 "

Waxy - but little too gummy
characteristic of Japan Wax
Cuts glossy showing white clouds
not stick to edge - is little
plastic - finger nail well indent
it instead of drafting away
the material

Ent'd P.M.
JAN 2 4 1917

Napthalene (Plain)	1 Part
Stearine "	1 Part
Shellac	2 1/2

Structure too Coarse
Melts to very fluid mass
Does not show Bubbles
Dry enough – not quite
hard enough –

Napthalene	2
Shellac	3

Grainy Structure much harder
than above Mix. does not show
Bubbles Much tougher than above
Does not cut glossy chip –
No Bubbles

Napthalene	2
Stearine	1
Shellac	4

Hard Enough – Tough
Grainy Structure – but pretty fine
does not cut with a gloss – very fluid
(No Bubbles)
Try Again

Not Impossible to Run it

Rec'd P.M.
JAN 24 1917

Tetra Cl. Nap.	2
Benzanilide	1
Shellac	3

Little Gummy. Pretty fine Structure
Fracture little glassy - Rosin-like
The heat of the hand will
render it Gummy - No Bubbles

Tetra Cl. Nap	2
Phthalic acid	1½
Shellac	3

More Gummy than above mix
But finer Structure. Fracture
is more glassy - the heat
of the hand softens it very
readily -

Tetra Cl Nap	2
Alpha-Naphthol	1
Shellac	4

Very little Rosolic acid
Plastic Mass - at ordinary temp.
Color is Red

Rec'd P.M.
JAN 25 1918

Regular E. Master Wax 2
Naphthalene 2
Shellac 5
temp 320°. let wool + skim off bubbles
Grains & fracture - but
pretty fine - yet it cuts
like bronze - and with
the Recording Stylus the
groove has the appearance
of the material crumbling
away at the cutting Edge

Rec'd P.M.
JAN 2 1917

E. Master wax 2 Parts
Naf 2 "
Shellac 5 "
Same as above
A closer Examination of this
Mixture shows that it has some
very good qualities. it is more horny than
the Regular E wax and as compact - But
when cutting with the Recording Stylus
the groove is not glassy. under the
glass it shows a white particle
intermingled with the mass - which
gives the appearance a pigment -
Try again

Rec'd PM
JAN 26 1917

Tetra Cl. Naps	2
Stearine	1
Gum Thus	1
Shellac	5

Plenty liquid to filter
Nice looking mass & cuts a thin
shaving - Hard + dry -
Only trouble there is shown in
the styrus groove a white particle
and that looks like a pigment
Crumbles away at the cutting
of the Record Stylus

Stearine	1
Naphthalene	2
Gum Thus	1/2
Shellac	4

Result - everything desirable Except
Hardness - the mass is too plastic
yet not sticky nor gummy -
it simply becomes plastic with
slight elevation of temp. say
80 or 90°

Ent'd ___ P.M.
JAN 26 1912

Tetra Ch. Naph	3 Parts
Gum Thus	1/2 "
Stearine	4

The Structure of this Sample is too coarse, and mealy - crumbly at the edge of the cutting stylus - it is Hard enough

Stearin	2
Naphthalene	3
Shellac	5

Very fluid at vaporizing point Poured off nicely - Sample is very nearly - cuts with resistance But the Structure is coarse - Mealy Raised temperature of the balance and poured off - that Sample Showed much finner Structure more compact - But not enough tenacity and too Plastic - Crumbles under the stylus -

Rec'd P.M.
JAN 26 1917

Stearic	1
naphthalene	2
Gum Thus	1
Shellac	4

Result. tacky Plastic – little gummy at slightly elevated temperature little granular in Styles groove –

Tetra-Cl. Nap	2
Benzamide	1
Shellac	3

Result Similar tacky as above – Styles cut groove shows white particles looks like pigment. fracture is more refractory than above which indicates closer structure –

Tetra Cl. Nap	2
Phthalic acid	1½
Shellac	3

Result Similar to next above only much closer structure. the fracture is very refractory. Rosin-like and cut with a chatter – brittle yet Gummy. Plastic

ORANGE
Rec'd P.M.
JAN 26 1912

Naphthalene 2
Stearin 2
Shellac 1

Structure too Coarse
Mass too soft - Mealy - but dry
Good Sample if Structure was more
Compact

Naphthalene 2
Shellac 3

Coarse-grain Structure - But Hard
enough & crumbles at cutting edge -

Naphthalene 3
Stearin 2
Synthetic Camphor 1/2
Shellac 6

Plastic at slightly elevated temp.
Chips Cuts without much resistance
but crumbles at cutting edge -
Mealy - Structure not close enough -
Much similar to next above - Except
that it is more plastic.

Rec'd P.M.
JAN 30 1912

Napthalene (Plain) 2
Dinitrophenol 1
Shellac 2
Coarse Structure. long crystals
Not compact. N. G.

Napthalene 2
Dinitrophenol 1
Shellac 3
Structure little closer than above mix
Not good mix - seperates on cooling

Penta cl. Napthalene 2
Dichlorophenol 1
Shellac 2
finer Structure than above two
Yet crystalizes too coarse
Cuts little more waxy -

Dinitrophenol 2
Pentachlornapthalene 1
Shellac 2
finer Structure than above three
Harder & more brittle - But
Some portion crystalizes Seperated
from the rest which is different in
Hardness & Color

Ent'd P.M.
JAN 30 1912

Pentachloronaphthalene 2
Dinitrophenol 1
Plain Naphthalene 2
Shellac 4
Softness between the fingers
Structure fairly fine but mealy

Dinitrophenol 2
Naphthalene (Plain) 1
Shellac 2
Brittle & mealy - coarse

Dinitrophenol 2
Shellac 1
Tetrachlornaphthalene 2
Structure Granular - mealy
too coarse - not quite hard enough

Dichlorophenol 2
Shellac 1
Pentaco Cl. Naphthalene 2
Very liquid -
Crystalline & mealy structure
when set held some patches
show to have drawn together
the mass is too soft.

Rec'd P.M.
JAN 30 1912

Dichlorphenol 2
Shellac 2
Tetra-cl-Naph. 1

Mass looks pretty compact but when scraping with clothing edge the surface shows uneven structure. some portions harder & of different color. the sample offers quite some resistance to cutting yet it is little plastic the finger nail will dent it without fracture.

Dinitrophenol 2
Shell 2
Penta-cl-Naph 2

This sample appears to be the best of this series - yet the structure is not uniform. some portions are harder. Recorder stylus cuts groove without much resistance but not glassy - may be would reproduce. Rough. Sets quick enough & lets go the glass without stick. has some contraction - try again

Ent'd . P.M.
JAN 30 1917

Dichlorphenol 2
Shellac 2
Pentachlor-naphthalene 1

Fois mat well to set evenly
some lighter patches appear of
different structure –
Structure is of pretty fine grain
and cuts fairly well – by a grain
Remelted the sample and shows
up better, more compact & Hard
and cuts with slighing without much
resistance – is little too brittle
Probably good sample to mould cylinder

" The addition of more Shellac to the mixture on next page → only heads to forming a coarser structure with making more resilient or tougher "

Rec'd P.M. JAN. 30 1912

Dinitrophenol	Parts
R & P Shellac (extra)	150
Pentachlor Naphthalene	110
	130

Melt phenol first, add Shellac gradually — stir all the time — then the nap. when all melted and temperature is 260° filter through 3/16" soft felt —

Remelt — raise temp to 270° and Pour into hot mould. The mould metal core was about 125° hot, and just as soon as the Dope was set the core twisted off easy and had to use Salvarsan to contract the blank from the mould tube.

Rough shaved down to about the proper size, that requires turning off a thickness of 1/8" at that depth the Dope was not compact. So planed the surface to close the structure & put in oven overnight temperature 126° Stood smooth, and still showed air spots.

1st Dec. Dope. Weight of Sphere as proved Hand Record on Cast in blank and finished C.

Pentachlornapthalene is the product that comes over last in the manufacture of the Tetrachlornapthalene. it is of higher melting point and tougher.

The addition of more shell to formula → tends to produce

Entd P.M. FEB 1 1912

Penta Cl Nap.	1 Part
Dinitronapthalene	1 "
Shellac	4

Makes nice shining Hard mass - fluid - but Foams with some air holes.

Pentachl. Nap	5
Nitro [illegible]	5
Shellac	4

Very fluid - enough to filter through 1/4 in soft felt. fluid. Running off samples after cooled and set, show foams air holes. Remove a portion.

Otherwise it is very hard and very compact would be useful for spinning tops. Roaches or fishing tackle.

Makes a smooth shining - glossy

Could be less brittle.

Try Again

Raising temperature for the above as high as 360° does not improve the product. - in fact it does not result against a thin fluid.

Note — After 14 days inspected Blanks made of the Dope on Next page →
and a white frost or exudation was apparent —

#2-1-19
1

Pentachloronaphthalene 100
Dinitronaphthalene 100
Ent'd P.M. R & P. Cotton Shellac 120
FEB 1 1912 melt frost 200 and Raise temp. 300° add Shellac gradually Stir all the time and let temp. gradually go up to 320° ¶ filter through 3/16" felt into the Coating machine Coated 4 blanks and placed in the Cold temp. 30° for 3 hours Shaved — Could not obtain a glossy Surface Examined under glass — the structure was very Porrous — or it appeared to be so under the glass — it may be that the cutting edge sealed off portion of the Dope instead of cutting through — and the sealing gave the Shaves the Spongy appearance

Two days later Examined the Surface of the Shaved Blank and found a white frost — an exudation from the Dope — That same frost does not show upon small sample buttons —

Ent'd P.M.
FEB 6 1912

Pentaclinap — 5
Dinitro-naphthalene 5
Shellac 6

Good Hard Compact Mass which can be lettered in the open through 3/16 file too - Hard to cut Records But would probably spin good commercial Records - Shellac may be increased to make tougher & Harder Mass after 10 days looks same as as when made -

Ent'd P.M.
FEB 7 1912

The addition of Synthetic - camphor — Pentaclinide Nitrotoluol & naphthalene does not improve the above mix.

Made Blank K - Standard with Lehman
Mr. Shaw and found made it natural
Blank Book
Made Blank T.

Ent'd P.M. FEB 12 1912

2-12-19
1

	Parts
Tetra Chl. Nap.	140
Stric acid	40
Synthetic Camphor	40
R & P extra Shellac	280
Sal Soda	20

Melt just thee and add Shellac gradually - when all dissolved & temp is about 250 add Sal.So. gradually - Keep flame on full & stir briskly all the time - When temp. has reached 320° filter through 3/16" thick soft felt - Remelt and pour into cold mould - as soon as cold the blanks let go both the core & the shell -

Ent'd P.M. FEB 12 1912

2-12-19
2

Stric Acid	80
Naphthalene	120
Synthetic Camphor	20
Shellac	280
Sal Soda	30

Made up same as # 2-12-19
1

Remark - Naphthalene Consumed after 2 months time

Ent'd P.M. FEB 13 1912

2-13-19
1

Stric acid	10
R & P Shellac (Extra)	16
Sal - Soda	5

Melt high temperature - as soon as Stric is melted add Shellac gradually and allow temp to Rise up to 300° then add Sa. Stir briskly all the time and allow temp to rise up to 460° filter at 440°.

The result is a hard - Soap like mass - its fracture is similar yet it is little plastic — the moisture from the fingers dissolves the surface and sticks not suitable for Master work. But the addition of Master wax produces a good mass - it mixes in all proportions to obtain a more or less hard within certain limits - Mixtures begin at about formula 1 Part of Master wax 1 Part - the result is then little sticky and in warm weather the chips would probably stick - add more Mi wax to overcome -

Ent'd P.M.
FEB 13 1912

2-13-19
2

This is the Same formula as #2-12-19 the only difference is in the making — which is that in the remelting the temperature was carried to 350° and was about half hour reaching there then the flame was turned down and allowed temp to reduce to 300° — Skimmed off the froth & Poured into called moulds — Contracted off O.K.

Stearic acid	60
Naphthalene	90
Synthetic Camphor	15
Rit P extra Shellac	210
Sal Soda	22

Made 12 mold

Ent'd P.M.
FEB 14 1912

Stearic acid	90
R+P extra Shellac	210
Sal Soda	30

Make quickly - Melt Stearic when temp is 180° add lac gradually when all dissolved and temperature is 300° add Sa. all at once Stir briskly and allow temp to rise up to 440° - by that time the mixture is clear except few bubbles and specks that are captured on the filter - filter through 3/16" thick Soft felt - into the Coating machine & coat Blanks

2-14-19
1

Mixture of # 2-14-19 / 2 — 1 Part

" 2-14-19 / 3 — 1 Part

Pentachlorophenol — 1/4 "

Melt together Produces a mass that is very smooth to the touch and shaves without offering much resistance to the cutting Edge and leaves a fine glossy surface

ORANGE, N.J. FEB 14 1919 P.M. Rec'd

2-14-19 / 2

Stearic Acid	14 Parts
Gum Elemi (fused)	4 "
Aluminum Stearate	1/2 "
Sal Soda	3 1/4 "

Saponify by adding the So. gradually to the first three. After all melted and temp above 360° Requires quite some time before saponification is complete Produces a mass nearly as hard as Carnauba Wax and just about the Same cutting quality. The structure looks finer than the Carnauba Wax.

Stearic Acid	14
Gum Damar	"
Stearate Aluminum	1/2
Sal. Soda	3 1/4

Saponify Same as above. And the Result is very much the Same

2-14-19 / 3

WASHINGTON D.C.
Rec'd P.M.
FEB 14 1912

Carnauba Wax 2
Stearic Acid 1/2

Increases the Contracting quality of Plain Carnauba

Carnauba Wax 2
Gum Elemi (fused) 1/2

Decreases the Contracting quality of Plain Carnauba and lightens the Structure.

Carnauba 2
Beta. Cl. Napthalene 1/4

Changes Dark yellow Carnauba Wax to light gray & produces a finer grain structure and little tougher & smoother

---

Carnauba Wax 2
Beta Cl. Napthalene 1/2

Same effect as above But in a greater degree. Both show a graining structure as if one portion crystalized sooner than the other.

ORANGE, N.J.
Rec'd P.M.
FEB 14 1916

Edison Master Wax 2
Japan Wax (Soft) 1/4

Produces a mass that appears of good Recording quality — Very fine grained. The Structure is closer — that is shown by the mass being translucent — more glossy & offers little more resistance to the cutting. Stylus —

Edison Master Wax 2
Gum Elemi (fused) 1/2

Produces a mass little harder & tougher & closer structure than Plain Edison Wax — the Effect is about the Same as the introduction of Japan wax except that the result is a more brittle instead of a more plastic as in case of the Japan.

RECEIVED
FEB 15 1912
Entd P.M.
FEB 15 1912

Tetra ch. Naph	140
Stearic acid	40
Synthetic Camph	40
Shellac	280
Sul. Soda	20

The above formula produced a good mass - Mr Edison said it was little too hard - tried to make softer by addition of Synthetic Camphor - for every part added the Result is a softer mass But the Structure alters to a coarse good mushy mass -
Then try by reducing the amount of Shellac - this works better but as the amount of Shellac is reduced the Synth. Camph. must be reduced also
The following is what looks to be a pretty good compound

Tetra	140
Stear	40
Synthetic Camp.	30
Shellac	200
So	20

Ent'd P.M.
FEB 17 1912

Ketrew el. Nap.	140
Stearic acid	.40
Synthetic Camphor	30
Shell	200
Sal-Sodam	20

Saponify at temperature between 210 & 220°. All the Bubbles do not disappear at that temp. Even at the end of 3 hours, then let temp. Rise up to 370°. The mass becomes much more liquid and the evolution of Vapor is very prominent — There is still be thin layer of froth that seems to perpetuate — filter right into mould. (cold)

2-17-19
/

6 P.M.
FEB 20 1912

Extra Ch. Naphthalene	140
Stearic Acid	40
Synthetic Camphor	30
R. & P. extra Shellac	200
Sal-Soda	20

Melt the first three together - then add the Shellac gradually when all melted and temperature is 240 - Start to add Sal. So - gradually stirring briskly all the time - Requires 2 hours to make - there is considerable frothing that dont melt away and has to remain on the filter - Raise temperature very slowly up to 300° + filter.

Remelt and heating quickly so as not from bubbles - Temp 320°

Pour into cold mould -

2-20-19
/

Very difficult to eliminate the last traces of gas bubbles

8 M P.M.
FEB 20 1918

Boiled Montane Wax in about 5 parts of water for 1½ hours and set to cool - found that the water was remaining would not seperate out of the wax as it cooled It looks as if a Solution —

RECEIVED
FEB 22 1912
P.M.

Cotton Cl. Resp.	140
Stearic	90
Synthetic Camphor	25
Salm Soda	20
R & Pegular Shellac	200

Melt the first three to temperature 330° now lower temp of the liquid to 250° add So. gradually in 35 minutes saponification is complete - add Shellac very gradually keep temp 280° all the time in about half hour all has been added stirring briskly all the time. let temp rise to 320° & filter through 2 thicknesses of Record Cotton wadding Right into cold mould

2-22-12
/

Rec'd P.M.
FEB 26 1912

Petro Cl. Naphthalene	560
Stearic acid	400
Synthetic Camphor	80
Sal-Soda (wet)	104

Saponify slowly allow temperature 210-220° after all so has been taken up let temp slowly rise to 310° - by this time (which this batch shows to be 1.45 hr.) the liquid is very much free from bubbles or gas and a scum which looks to be oily floats near the edges of the pan - allow temp. to drop to 290° & filter through fairlikeness of Record wrapper Cotton or 3/16" soft felt

Will Pumper # 2-26-12

Remark - Some air holes on one side of the blank after showed smooth -
Probable cause - Dope had not cleared enough before pouring -

Structure very fair

Structure very fair - Some cracks - probably tiny air holes

ENTD P.M. FEB. 26 1912

2-26-12 — 100
R & Rep. Shellac 260-270° 100
Temp. 310° & filter through 2 thickness Record wrapper Cotton
Blank showed air holes on one side the side which the pouring was done — immediately after pouring — dipped into Ice Water to chill — probably wrong made & filtered too quickly the cause of Bubbles
Blank 6 Allowed
2-26-12
1

2-26-12 — 120
R. & P. Ex. Shellac 120
See March 1st Blank 6 Rejected
Melt slowly at 220 to 230 when Shell is all taken up let temp slowly rise to 280° & filter — was too Viscous to go through two thickness of Record wrapper Cotton part through a portion and balanced through one thickness
Chilled in Ice Water
Will Number # 2-26-12
2

Structure very fair - probably due to tiny hair holes is the reason of the crackling noises -

Rec'd
FEB 26 1912

Rec'd P.M.

#2-26-12 — 140
R.+P. Ext. Shellac 120

Melt slowly - add the shellac at temp. 240-260 when all taken up. Raise temp to 290° & filter through 2 thicknesses of Record Unwaxed Cotton - goes through cloth small stream but apparently quick enough in another hour - Had moved about 150° fat. as soon as poured chilled into Ice Water. Extracts O.K.

Mill Number #2-26-12
3

Structure not so compact as # 2-26-12/1 + 2-26-12/2 and # 2-26-12/3 — due to excess of solvent material

Structure a shade better than # 2-27-12/1 but not as good as the 1 & 2-26-12 #1-2 & 3

But surface more uniform — does not crackle so much

Rec'd from Mr. Lawton Feb. 26 1912 at 2 P.M.

Rec'd from Mr. Lawton Feb. 26 1912 about 2 P.M.

Rec'd Feb 27 1912 P.M.

2-26-12 — 140
R & P 6 gs Shellac — 100

Melt slowly add Shellac at 240-250 when all taken up. Raise temp. slowly to 290° & filter through 3/16" felt & chill in Ice water. Looks good, & compact. But a small piece between the fingers softens readily — which indicates that the amount of Shellac is probably the minimum with that particular Solvent. # 2-27-12/1

Rec'd from Mr. Lawton Feb. 26 1912 about 2 P.M.

Rec'd Feb 27 1912 P.M.

2-26-12 — 120
Pontoc cl. Naphthalene — 20
R & P. 6 gs. Shellac — 100

Melt slowly add Shellac gradually at temp. 240-250 — when all taken up allow temp to rise slowly to 290° & filter through 9/16" soft felt and chill in Ice water.

2-27-12/2

Structure coarser than
2-27-12 which indicates
that there is not enough shellac
in proportions to Naphthalene mixture
Surface uniform

COLONIAL XII 1911 1912 XIII
SERIES
NEW YORK

Entd P.M.
FEB 27 1912

# 2-26-12	100
Pentac Cl. Naphthalene	40
Shellac R.&P. 4x	100

Melt Slowly - add Shellac at 240-250° - when all taken up allow temp. to rise slowly to 310° + filter through 3/16" soft felt! and chill in Ice water. this blank did let go the mould little easier than the 4 previous experiments

Will Number # 2-27-12
3

NOV 1 1918 P.M.

made six Blanks with formula 2-26-12 with the only difference that I have run the temperature up to 300° just before pitching - that was to enable me to use a 3/8" thick soft felt - which worked all right - it is a little slow going through - 2 of the six boards extracted from the mould cracked - remelted them and filtered again into the mould through one thickness of Record wrapper - cotton - just enough to prevent bubbles coming through - both of them seems to be more soluble in water -

will mark these two with the additional letter R.

Surfaces on all of the six blanks showed to be very compact - with the exception of 3 blanks which did not chill uniformly - the moulds must be uniformly hot. about 170° or 200° - just enough so that the dope will not boil and so it will not cool enough to set - because if it begins to set at normal temperature the structure of the dope is coarse

Entd P.M.
MAR 2 1912

Made 2 Blends & Returned to Mr Hodges

Lettuce Ch. Nap.	75
Stine	25
Syn. Camp.	18
Sale Soa	6 1/2
Shell	125

Melt first three - Saponify - then add Shellac gradually - when all taken up let temperature rise slowly to 310° - skim off froth - filter through 3/16" soft felt into Hot moulds - then chill into ice water

3-2-12
/1

RECEIVED P.M. APR 4 1917

8 mi. Blank

Tetra Cl. Naf. -	300
Stearic	112
Synthetic Camp.	60
Sal. Soda -	28

Saponify slowly then add

R+P Eq. Shellac	500

The above weight was not quite enough to fill the mould —

Was filtered twice - 1st through a 3/16" soft felt and heated again to 300° and filtered again through fine linen right into mould. Chilled in sea water - required about 3/4 hour - extracted with considerable force - next morning was cracked —

RECEIVED
MAR 3 1912
P.M.

Imi Blank

Tetra cl. Nap –	360
Stearic	134
Synthetic Camphor	72
Sal. So	34

Saponifying thoroughly & add

K Pg. Shellac	600

filtered through 3/16" felt and outer layer of lime filter — this filter is too thick 1309 grs. would not pass through on account of congelation ∴ Consequently the Blank turned out only 6 inches long.

Will number 3-5-12

Rec'd
P.M.
MAR 6 1912

Pressi Blank

#2-26-12	—	700
Shellac	—	700

Melt the first - Raise temp. 300° Keep there until all gassing is illeminated - add Shellac gradually - when all taken up - skim off the Grits - Raise temp. 310° filter through fine Linen into another container - then Pour into mould. Heated about 150° - through Vailling to retain any possible bubbles -

#3-6-12
1

the Blank is not numbered at present

made Small Cylender of the Same dope as on next page → there was only enough dope to mould about a half a blank

Will Number # 3/19/12
1

RECEIVED
MAR 3 9 1912

8 mi Blank

Made Cylender with Dope as follows

Stearic Acid	840
Stearate of Soda	60
Stearate of Zinc	15
Per Oxide of Hydrogen	25

Mult all ingredients together when all fluid and temperature is 210° add the Per Oxide Hydro- and stir briskly - boiling & frothing Takes place which gradually slows down in about 3 hrs. the temp- rises to 275° filter through double material one a layer of 3/16" soft felt & one layer of Handkerchief linen goes through like water. Pour into hot mould and chill in Ice water. when set the outside mould shell pulls out loosely & the inside with a light tap. after the blank was extracted it cracked open - found that the inside of the blank was warm & the outside cold which caused the cracking - no doubt.

Melt & Remoulds # 3-19-12-#1

3-23-12 - Stock is now one Blank & Mushroom Product - Two Stock

One Small Size Blank
Same Dodge as opposite →

3-20-12
1

ORANGE N.J.
1912 P.M.
MAR 20 1912

8 mi Blank

Made cylinder with ~~Dodge~~ as follows —

Stearic Acid	1000
Stearate Soda	60
Water	100 c.c.

Melt the first two. when fluid and Temperature is about 200 add the water gradually stirring all the time — the temp must not rise above 220 for 2 hours then slowly up to 280° in 1½ hrs more the froth & Bubbles have all disappeared by this time — filter through 3/16 in Soft felt & strain together — then refilter again — then Pour into hot moulds — let stand for about ½ hr & chill in Cold water for 10 minutes let stand in the open for a short time and chill again in cold water.

Crackedon Cooling — Remelt & mouldagain

3-20-12
1

5-21-12
Returned One Blank to Mr Hunn too Soft

8 mi Blank

Stearic Acid	1000
Sodium Stearate	20
Water	5-qts.

When all melted and temperature is about 200° add the Water gradually - Stirring all the time until all the bubbling is over then put on Steam Table for 24 hrs. temperature of Soap 230° - filter twice through 3/16" Soft felt & Handkerchief linen and pour into cold mould. But the taper cone must be warm about 150° - Chill in cold water not ice cold - Mill Number # 3-21-12 / 1

3-25-12

Delivered One Blank to Mr Hiam

Report - Too Soft

Remark —
The result of experiment on next page is bad. The blank turns out unevenly crystalized the structure is coarse instead of compact. Making a small sample of the same formula turns out very good — a careful observation has shown me that the heat required to complete the Dope will permeate through a small portion and within a reasonable time. But a large portion requires more heat and much longer time — that difference has the effect of condensing the Shellac enough that it remains rubbery upon cooling and does not set at the same time as the other ingredients which is the reason of the Coarse Structure and gummy-like mass —

ENTD
MAR 25 1912

Gmi Blank

Jutra Cl. Naf.	350
Stearic Acid	175
Synthetic Camphor	75
Sal. Soda (wat)	50
Shellac	500

Saponify the first three — temperature up to 300° to clear off all bubbles requires about 1 hr. — Add shellac gradually Stir all the time when temperature reaches 300° filter through 3/16" Soft felt and Handkerchief linen into another Vessel then Pour into moulds outside cold and inside tube about 125° warm — let stand about 10 minutes then place mould in water (city water) when the blank has set up to the inside tube take out of the water — tried to force out inside tube was still too warm Run water in the tube to cool it then the inside tube contracted — the outside slipped off easy —

Entd P.M.
APR 18 1912

Since the date previous to this have made numerous experiments of small samples only - some of which looks pretty good and has splendid man made of them. will entire their compositions in book

Boil Tetra Cl. Nap. with Ed. Caustic Soda that has been subjected to delinquescence by exposure Temp. of limbed water 33 D° and the bubbling had subsided - filter through Handkerchiff liquid into cold water

Entd
APR 22 1918

Since the date previous have been experimenting with various combinations — the colors have made what I consider a discovery in the working of shellac — that is to melt the shellac with chlor-aniline in sufficient quantity to render it fluid that it will filter through 3/16" soft felt and finest Handkerchiff linen and then afterward evaporate the Chlor-aniline until the shellac assumes a crisp consistency again. Have tried shellac 2 parts with Ortho-chlor-aniline 3 parts and shellac 2 parts with Para-ch.-aniline 3 parts the latter shows no noticeable difference to the former so far as the consistency of the shellac after evaporation of the Cl-aniline — Both mixes good with Tetra-cl. Nap. which renders the shellac softer — upon close examination found that the Tetrach. Nap only mixes with the so treated shellac and alters the structure of the shellac to produce a coarser grain — the resulting soap has not so much —

Ent'd
APR 24 1912

affinity for high temperature
as it has with Shellac not
treated as aforesaid - the
Dope has not quite so much
tenacity

#4-24-12-#2

Make larger quantity
Para-chlor-aniline 50.0
Shellac 20.0
Melt & filter through 3/16" soft
felt and finest handkerchief linen
into flask bottle and then
place over heat to evaporate the
Para-chlor-aniline

Para-chlor-aniline melts at 160°F.
would not evaporate from flask bottle
quick enough so turned into Casserole
when bubbles begin to appear turned
the mass into tin to cool - was plastic
the next day - then placed the tin on
the steam table - temperature there was
155° after two day's lifted the tin and
the stuff was plastic enough to run slowly
after 10 days the stuff was Hard -

Ent'd
APR 25 1912

Extracting the Wax from
Shellac! —

Dissolve 10 gm. Shellac in 15 c.c.
of Diethylaniline - Raise temperature
to 300° & filter through fine linen
Remelt without stirring - the
Diethylaniline will come to the top
pour it off and evaporate - the
wax will remain -
This method was found by attempting
to liquify the Shellac enough
to filter very fine then evaporate
the Solvent to obtain the shellac
free from dirt & grit - But the
resulting Shellac is so condensed
after evaporation that it is difficult
to remelt - But the quality of
Shellac seems to be toughness
Then before the treatment -

Steinauer #4-25-12-#2

Dodd's Carnauba wax 1 Part
Stearic acid 1 "
Melt together Raise temp to 300°
and filter

Ent'd P.M.
APR 26 1912

Carnauba Wax

Melt with some Cresotinic acid to reduce the brittleness of the wax

Continued

Ent'd P.M.
MAY 6 1912

Filtering Shellac

Actic Ether 500 cc.
Shellac 100 gm.

Heat to 130°F. Stir briskly all the time

Filter through fine linen into Distilled water at normal temperature — the Shellac precipitates in a spongy like form — the Ether enters into the water from which it may be evaporated at 150°F.

The filtered Shellac is then placed on sheets of absorbent paper to dry for about 2 days — when it is like hard dry powder —

Put up Stan. Table, when a little down temp 125° on the 11th at 12:15 pm. Took out the ice to then not thinning dry, and Smith practical

Ent'd P.M.
1912

#5-7-12 #1

Actic Ether 750 cc.
Shellac 150

Temperature 125°. stir all the time in about 20 mi. filter through 3/16" soft felt + fine linen into filtered water at normal temp. — does not crumble as well as should. forms sponge like masses. would prefer a powdery form.

Took the water + actic Ether liquor to Dr. Lodstein to distill off the Ether.

Ent'd P.M.
MAY 8 1912

Actic Ether 30 cc.
Shellac 3 gm.

Boil at 170° for 45 mi. and actic Ether 10 cc. more to make more liquid for filtering. after 15 mi more.

have water same temperature as Shell. sol. 170°

The water was 140°. works much better than water at normal temp. Next time have water same temp. as Sol.

Ent'd P.M.
MAY 8 1912

5-8-12-#1

Syn. Camp. 10
Arctic Ether Sol. Filtered Shell. 5
was too liquid add Shell 1½ more
there is no bubbling - Temp. 5-15 256°
Was on Steam table over night! the
mixture is white soft Rubbery - add
Para Ch.-aniline 1-1

5-8-12-#2

Oil of Canada Balsam
Triturate in Arctic Ether and
let condensed to the point
of thick bubbles -

5-9-12-#2

The Sample upon glass before
adding more Ortho-Ch.-aniline showing to
be very hard & brittle & free from Bubbles

Ent'd P.M.
MAY 9 1912

5-9-12-#1

Para-aniline 5
Shell — 5
in Casserole on Steam Table.
Next morning let cool - result
a hard clear brittle mass with
some Bubbles - 20 Min. later
the Gring are to gummy mass

5-9-12-#2

Ortho-ch-aniline 10 c.c.
Shellac (Shell) 10 gms.
Temp. of ch-aniline at 200° if begins
to evaporate add shell - gradually
Temperature about 280° until now the mass was
condensed as that it was difficult to stir add 15 cc more
of ortho ch aniline to liquify at 4.45 Raised temp. to 410° the
Boiling Point at 4.15 P.M. Raised to 460° - 500° Poured off. was thick
500°

5-9-12-#3

Ortho-ch-aniline 10 c.c.
Quinine sulph. 5
Shell — 15
add little shell as more on Bunsen burner 2.50
at 12.20. temp. 2-80°
Bubbles much - not. —

Ent'd P.M.
MAY 9 1912

Hn'd P.M.
MAY 9 1912

#5-9-12-#4

Paraldehyde 10 gms.
Shellac (Filtered) 10 gms.

at 4.00 temperature was 242°, Keeped condensing cover on casserol all the time at 4.30 was down to 237.5° at 5.05 temp. 370° 1st pouring #5-9-12-#4 at 5.30 was plenty liquid at 3.25° few very small bubbles - Put in oven at temp 125° - 2nd pouring at 5.50 P.M. put in oven at 125° temp. - Next morning the mass was some plastic - yet Brittle - glass-like structure having some fine bubbles on the surface. more on the second sample than on the first - the second sample is harder & more brittle - Remelted the scrapings around the casserol and added some Ether - C.C. Prof and stearic acid and heat moderately. the proportion of Ether was a little more than the Stearic - (not weighted) but enough to make the result wax-like cut. after a little time the bubbles all go off and the result is a clear liquid enough to pour - will number sample 5-9-12-#4 A

Hn'd P.M.
MAY 9 1912

#5-9-12-#5

Paraldehyde 10 gms.
acetic Ether filtered Shellac made the gel 10 "

Bring to boiling at 87.5° temp. for 20 min. there was frothing and spattering at first which cleaned off - put on steam-table over night - Next morning the temperature was 260.0° showed no sign of Bubbles and was dead as thick as gum and put a sample upon glass - will No. 1st pouring - put glass upon tin cover on Steam table (5-10th at 4-30 P.M. take out to cool - the glass sample Inspection on the 13th shows the Dope to be brittle where applied thin and plastic - where thick. on the 13th at 9.00 a.m. the Dope in casserol has been on steam table night and day since first melted - took a small buttons on glass and it hardened quickly - But contain some bubbles - Poured off about ½ the quantity upon glass and added 5 c.c. of acetone to the balance and put on steam table at 9.40 a.m. at 10.05 the acetone is reduced to Bubbling more than before the addition - add Syn. Camphor. ¼ part at 11.05 contained Bubbles plentifully. I. N. G.

Ent'd P.M.
MAY 1 0 1912

5-10-12
#1

Stearic acid 10
Tetra Cl. Naph. 15
bring to 500° temp. and filter through 4 thicknesses of Recorded unsifter cotton of finest linnen while temp. has dropped to 300°. The result is simply a mixture which crystalizes much similar to Plain Tetra

Ent'd P.M.
MAY 1 0 1912

5-10-12
#2

Stearic acid 10
Tetra Cl. Naph. 15
Para Cl. aniline 5
Raise temp to 500° — then lower to about 340° & filter same as above. Dropping Pt.

Ent'd P.M.
MAY 1 0 1912

5-10-12-#3

#5-10-12-#1 ——— 7½ Parts
#5-9-12-#4 ——— 7½ "
was too gummy. add more
was again too gummy - Have no more #5-9-12-4 So had #5-9-12 #1
2:30 Temp 258° Absolutely no Bubbles -
at 4:10 have taken 4 samples about 1 hr. apart - now it just begin to bubble if stirred - Pour off

Ent'd P.M.
MAY 1 0 1912

5-10-12-#4

#5-10-12-#2 ——— 1 Part
#5-7-12-#1 ——— 2 "
Condenced at 260° in 20 min.
add #5-10-12-#2 more — ½
Condenced hard in 10 min more M.P.

Ent'd P.M.
MAY 1 0 1912

5-10-12-#5

Para Cl. aniline 5
#5-7-12-#1 10
at 3:15 temp was up to 4:30°
lower the temp. to 3:30°
at 340 tested was brittle but full of froth. add Stearic acid ——— ½
at 4:50 was Condenced to plastic mass

#5-10-12-#3

Inspection on the 13th shows the mass to be plastic - but of a waxy consistency and a grainy structure

Ent'd P.M.
MAY 10 1912

#5-10-12-#1

Para Cl. Aniline 7½
#5-9-12-#1 10
at 4:30 temp. gradually raised to
3 74° and slice protals
at 4:45 now 400°. lower it - take first sample
on glass - leave in open air at 4:50 - temp 360 no
more frothing - at 5:15 temp. 380° take sample
was frothing much - Add Tetra Cl. Naph fuse
and lower temp. to 380°
at 5:30 temp. 345° take sample #3
still frothy - add Tetra Cl. Naph more ½ pint
and further at 4½ more + ½ more 4½ more
in ½ pint more 4 pint more 4 pint more
5:50 take Sample #4. Tube is now clear temp. 350
Turn off the Heat for overnight -
Next morning at 8:10 put on Heat Raise temp. to
310° there is no sign of Rubber - take Sample #5
at 9:30 was condensed stiff

#5-11-12-#2

Inspection on the 13th show a
gummy - plastic mass -

Ent'd P.M.
MAY 11 1912

#5-11-12-#1

Acetone 40 cc.
#5-7-12-#1 10 gms.
Put on Steam table in large Crucible
with condensing cover
at 9.45 acetone had evaporated off and the
result was a rubbery mass - add
acetone 10 parts aniline oil ½ pint in
few minutes was again evaporated the
result was a more elastic mass & full
of stiff Rubbles - Add fused Benzoic Acid 1 pint
at 10.05 was more plastic but stiff
add Para Cl. aniline 1 pint + 1 more
at 10.30 - was Condensed stiff -
the Rubber showed to have separated
Same -

#5-11-12-#2

Para Cl. aniline 5
Dimethylaniline ½
#5-7-12-#1 5
at 10.45 while at other work the
stuff Boiled over the Crucible - noticed
it soon after and lowered temp. the boiling
over was at a temp above 350°. at 11.15 was
thick and Rubbles add Para Cl aniline more ½ pint
at 11.20 Poured off with Rubbles - add some
Para Cl. aniline to liquify what is left in crucible + Coated
on paper + Poured some upon glass + put in oven 1½ hr.

Put'd P.M.

MAY 11 1912

#5-11-12-#3

Paracl. aniline 5
#4-25-12-#2 1/2
#5-7-12-#1 5

Melt the first and try on glass - when cold it is so hard that the finger nail will not scratch it - Add the second and try on glass then the finger nail will scratch it and is Hard-wax-like - add the 3rd gradually and keep temp around 300° try on glass as soon as all melted and clear - the result is a plastic mass - but clear -

at 12.15 try another sample on glass at 12.20 Temp. 275° looks as if Bubbles was begining to form Pass off.

Inspection on the 13th. Shows a mass which may be described as a plastic - Brittle consistancy - the fracture shows that the Carnelian may will simply mix throughout to destroy the tenacity of Plain shellac the sample acts Brittle - yet it is plastic enough to sink the finger - nail into - T. G.

Put'd P.M.

MAY 13 1912

#5-13-12-#1

Ortho-cl. aniline 50 cc
Plain Shellac 10

Resolve. When temperature has reached 390° (Boiling point) Dip paper and allow to dry in open air until #5-13-12-#1A (strong dry after 10 days)

Begins to boil at 11.15 (404°) at 11.53 Raise temp. to 410° Gas on full - only admitted bubbles between — Filter through paper - Some would not go through at the end - Put back over flame at 1.20 P.M. Raise temp. to 410° allow Vapors to escape - no Cover - Pass off at 2.05 - had few tiny bubbles - Result - bottom at low temp. Hard - Brittle - Little bunny - pretty close to Plain Shellac

Put'd P.M.

MAY 13 1912

#5-13-12 #2

Xylidine 10
Plain Shellac 2 1/2

Resolve. Begins to boil at 392° (not 390°) Dip paper into and allow to dry in open air until #5-13-12-#2A

Boil at 400° until 1.30 + filter through Photo filter paper. Condensing temp. about 300°. No Bubbles until it becomes quite thick

Ent'd P.M.
MAY 13 1912

#5-13-12-#3
Diphenylamine
Plain Shellac
Shellac Dissolves when temperature is 300° Boils at 310°
at 380° begins to froth & thicken
Poured off – Next morning was left Rubbery
.N.S

Ent'd P.M.
MAY 14 1912

#5-14-12-#1
Aniline acetate
Dominant melt at low temp.
add little Xylene
Plain Shell –

Ent'd P.M.
MAY 14 1912

#5-14-12-#2
Methylaniline 10 cc
Plain Shellac 10 gm.
at 9:30 Poured off # full of bubbles
MAY 14 1912 viscosity which was so thick as could possibly be used and contained Bubbles – add 4 gm. of Xylidine to the balance and reheat – the bubbling is eliminated by the addition of Xylidine at 10.15 Temp was 360° Thickens up and becomes a mass of Bubbles. add Xylidine 5 more to liquify at 12.00 – Poured off was Condensed stiff.

Ent'd P.M.
MAY 14 1912

#5-14-12-#3
#5-8-12-#2 ——— 5 gm.
Xylidine 5 cc.
at 10:30 - Temp. was 350° and a sample on glass is now condensed a considerable – at 11.00 Poured off a sample on glass #5-14-12-#3A – H and Bottle and after adding about ½ of #5-14-12-#2 – Funny-Bottle when liquid from the caverns Pour off a Sample on glass #5-14-12-#3B Funny-Bottle
Poured off at 11.10 #5-14-12-#3C Funny-Bottle

Ent'd P.M.
MAY 14 1912

#5-14-12-#4

Aniline Blue Oil 10 cc
Plain Shellac 5 gms

Boils at 260° filter through 4 thickness of Record wrapper Cotton + 1 of fine linen. put on to boil again with Condenser Contact at 1.10 Temp 270° begins to thicken. at 1.45. had thickened enough to form Bubbles. temp 300° at 2.05 Poured off on glass - Contained Bubbles. Sets very readily to hard Brittle Mass

Ent'd P.M.
MAY 14 1912

#5-14-12-#5

Aniline Red Oil 10 cc.
Plain Shellac 5

Boiling to boil - at 1.40 filter through 4 thickness Record wrapper Cotton Put on flame again to boil at 2.20 - the temp was 260°. at 2.30 temp 330°.

Poured off at 4.30 p.m. - had condensed and add more aniline but had not clear - try again -

The Aniline Blue Oil reduces with the same quantity of Shellac quicker than the Aniline Red Oil.

Ent'd P.M.
MAY 14 1912

#5-14-12-#6

Xylidine 5 cc.
Ether Extracted Shellac 8/5 gms.

Temp up to 340° then lowered to 300°.

on Opened Flame bubbles appeared from upper portion. Pinta CL. Nap. to the balance, about 1/2 x 1/2 — well #2 5-14-12-#6 A

Poured off at 3.50 P.M. there was no sign of Bubbles, it set almost instantly to a tough mass - little plastic - breaks readily - the fracture shows a coarse grain - not a good mixture

Ent'd P.M.
MAY 14 1912

#5-14-12-#7

Steam acid 1
Pintura Cl. Nap. 1/2
#5-14-12-#6 4
Temp up to 270°

Ent'd P.M.
MAY 14 1912

#5-14-12-#8

Cannada Balsam 20 gms.
Xylidine 15 cc.

Melt Balsam temp. 340° when all Bubbles are evolved add xylidine. Put on Steam table over night

On the 15th at 2.30 Poured off. was perfectly clear. Polymerized set hard on cooling.

Ent'd P.M.
MAY 15 1912

#5-15-12-#1

attempt to find a solvent to condense shellac so the product may be in liquid state to pour into moulds and set dry - tough & Hard -
Paraldehyde
Plain Shellac
Dont to warm - temp. Rising 240°
add few drops of Aniline Red oil -
at 248° Much of the aldehyde has evaporated
combination takes better but - but makes simply an addition product - soft - sticky

Ent'd P.M.
MAY 15 1912

#5-15-12-#2

Aniline
Plain Shell -
Freezing good at 280°
at 11.45 Temp. 310° - down to 280°
at 1.25 - was thick enough to begin to Bubble if stirred Pour off
Sample upon glass does not set Hard as soon as cold - is little gummy & sticky

Ent'd P.M.
MAY 15 1912

#5-15-12-#3

Xylene
Para Rubber
Melt Raise temp to 320°
Makes clear Solution - No Bubbles
add some #5-14-12-#8 - this does not Combine - simply mixes to form a pasty - semi-hard - coarse grain mass -

Ent'd P.M.
MAY 15 1912

#5-15-12-#4

Aniraldehyde
Plain Shellac
Freezing good
Temp. 250° to 300°
Keep on adding shellac until a sample upon glass sets Hard as soon as cold - there is plenty of Bubbling - Keep on stirring until Bubbles eliminate very concise - Shellac - temp 290°
Pour off at 5-00 - Bubbles -
The importance attached to this Ex. is that the resulting mass is very much the same as plain Shellac - little tougher.

Ent'd P.M.
MAY 15 1912

5-15-12-#5
Nitrocyclol
Plain Shellac
Resolves good
Temp. 300° & 240°

Keep on adding shellac until a sample upon glass sets hard on cooling — there is plenty of Rubbing the experiment ahead of this sets hard when it is more liquid than this — Pour off at 5:45: the result is much like Plain shellac without hoarding but no gained anything because the Rubbing is there just the same.

Ent'd P.M.
MAY 16 1912

Stearic monobu
5-14-12-#8
5-15-12-#4 melt + test was gummy
add a little Hexa Cl. Naph. Black Residue
add # 5-15-12 #5 — Coagulates —

Ent'd P.M.
MAY 16 1912

5-16-12-#1
Stearic acid . 50 — 2 1/2
Tetra Cl. Naph. 75 — 120 3 3/4
125 — 140 6 1/2
Temp. not above 240°

Some Rubbing was intimable
Poured off at 12:00 — would not set Hard + Brittle. on glass — was Hard — Plastic — after cooling & set. The surface shows a frosted appearance, not enough shell
Remelt and add 1/2 more of shell.

5-16-12-#2
Ortho vitrinol
Shellac
Resolves good —
Result — Rubbery when when liquid enough to Pour — when sets hard on cooling the moisture Bubbles — Remains soft + Rubbery after 18 days & after 3 months
5-16-12-#3
Paraldehyde
Shellac
Dont dissolve with ease

Ent'd P.M.
MAY 17 1912

5-17-12-#1

Resinoon
Plain Shellac

Raise temp to Boiling and dissolves when liquid boiling sets Rubbery - when further Evaporated and still liquid enough to pour. Lets Hard on cooling - Bent with some bubbles

#

5-17-12-#2

Trichlorethylene
Plain Shellac

Bring to Boiling - Shellac swells & Bubbles much Won't Dissolve
Pour off - Spongy - when cold is Brittle-like - crumbles between fingers -

Ent'd P.M.
MAY 17 1912

5-17-12-#3

Metaldehyde
Plain Shellac

Bring to Boil 5:30° Dissolves good taken up considerable Shellac when liquid test on glass when cold is Rubbery - put glass on steam table to Evaporate will # 5-17-12-#3A - at 11:10 temp 260°
when quite thick does not set Hard on cooling - Rubbery & tough
add little Stearic acid & little Tetralin Wap - at 11:45 Pour off

Stearic acid & little tetralin wap on cooling
Spongy Shellac

Ent'd P.M.
MAY 17 1912

5-17-12-#4

Methy-Ethyl-Keton
Plain Shellac

Begins to dissolve at boiling temp 160°
Evaporates very quickly - Bubbles much
add Stearic Acid - Temp up to 300°
Samples on glass when cold shows a grainy semi-plastic mass - add little Tach-wap - Pour off at 1:20 - Murky mass

Ent'd P.M.
MAY 17 1912

5-17-12-#5

Paraphenetidin
Plain Shellac

Mixes good have taken samples upon glass from time to time at 3:15 the last sample on glass set hard quickly add Stearic Acid about 20% Was quite free from Bubbles until Stearic acid was added - was brick staining will for the new - at 3:45 a sample upon glass shows a grainy structure at 4:10 took sample on glass shows very few Bubbles at 5:40 temp 260° left to cool for the night On the 18th at 11:30 was full of Bubbles and thick elastic - Pour off - too far gone

Rec'd P.M. MAY 17 1912

5-17-12 - #6

Formaldehyde
Stearic acid
Shellac

Boil at 270 to 290° for 2 hrs. when no more sign of formaldehyde evaporation add Plain shellac

2.45 Shellac melts freely but does not spread into the stearic acid as well as it does a varnish add more stearic acid and stir briskly - temp between 260 to 290° after ½ hr. combination takes place - is shown by the froth - a sample upon glass acts quickly and looks like good showing quality - Best froth is not eliminated - further heating shows samples upon glass when cold and not to be more transparent over again there must be more thorough combination

3.30 Temp. 275° Sample upon glass before adding so much shellac crystalized to a more wax-like material at 3.50 Pour off was full of froth - looks like too far heated

Formaldehyde at 210° will not dissolve Shellac

Rec'd P.M. MAY 17 1912

5-17-12-#7

Xylidine 100 cc.
Plain Shellac 30 grms.

100 cc. of Xylidine equals weight 92 grms.

Put on Steam table in oven at 4:30 left there over night Temp. 210° - next morning on flame temp. 250° for fifty hrs. let cool over Monday, Monday on flame 250° all day - let cool over night Tuesday on flame 250° - is now very thick and bottom Bubbles all through It does not set hard enough to be bottle

5-17-12 - #8

Formaldehyde about 3 parts
Shellac " 1 "

Begins to boil at 200° at 4.05 - set out to cool Pour off the liquid that come to top - and lay the thick stuff upon glass - there was a little of the shellac that did not drop to the bottom like the greater portion

After Cooling remains Elastic - Soft Solve after 12 hrs. & 48 hrs.

Ent'd P.M.
MAY 17 1912

Aniline Red oil.
Antimony Tartrate
Formaldehyde

Ent'd P.M.
MAY 18 1912

Stearic acid 5 gms.
Camphor 3 gms.
Hydrochloric acid 3 cc.
add the H. acid when temp is 200° then
cover & raise to 250°
at 11.40 put on glass. show a purpose
like mass. but more naphtalene - add H. acid 200 gms
at 12.30 turn off heat for over Sunday
M.G.

Ent'd P.M.
MAY 20 1912

Boil together
Xylidine (greater portion)
E. Orthoxylenol Lesser exportate
and little Metaldehyde
Very little Aniline oil

5-20-12-#
5.00 P.m. Xylidine 10 cc Heat 240° 1 hr
" Metaldehyde 10 cc 250° " 8 " trough 240
Para Cl. aniline 10 gm. when cooled is Black Brittle

Ent'd P.M.
MAY 21 1912

Paracl. aniline
Sulfur
Shellac c -
Result Rosin-like mixture not
Sticky - not tough.

Ent'd P.M.
MAY 22 1912

Red Aniline oil
Sodium Phosphate Tri-basic
Hydrochl. acid — N.G.

Stearin-naphtha about 1
Para Cl. Aniline " 1
produces a nice wax-like mass
Cold shell — (Plain)

Ent'd P.M.
MAY 22 1912

Stearin-naphtha 3
Pentac Cl. Nap. 2
Para Cl. aniline 5

Stearin-naphtha 3
Para Cl. Aniline 5
Makes ~~good~~ cutting wax
Try again

WOK

Ent'd P.M.
MAY 22 1912

Pentac Cl. Nap. 3
Dinitro. nap. 3
Shellac — 5-17-12-47 5

Ent'd P.M.
MAY 23 1912

Pentac-Cl. Nap. 5
Pyrogalic acid 1/4
Naphthylamine 1/2
Shellac about 2
Condense in four minutes
the Pyrogalic acid is the agent

Pentac Cl. Nap. 5
Benz. Phenol 1
Shellac 2
Condenses to Elastic solid
M. Bubbles

5-23-12-#1
Pentac Cl. nap 5
Naphthylamine 1
Shell 5

Sets hard Temp. around 240°
Rattle quick Pour off at 1.30 — Temp 162° with lower
Temp
Sets cold irregular color & cracks on top

Ent'd P.M.
MAY 23 1912

#5-23-12-#2

Tetra-cl. Naph-	5
Naphthylamine	1
Shellac	5

Temp. around 240°

Sets cold irregular color & uneven on top.
Sets hard & brittle quick enough.
Color lighter than #1

Ent'd P.M.
MAY 23 1912

Naphthylamine	5
Shellac	3

Filter at 260° Result-brittle-average
temp 240°-Very fluid-no Bubbles except at finish.
add very little carnuba & continue

Naphthylamine	5
Stearic-Acid	2-1-1-1-1-1-1-1-1-2

Naphthylamine	6
Stearic acid	1-1--2-4

#1-23-12-#3

Naphthylamine	5-1-1-1-1-2
Carnuba	2-2
Shell-	6-1-1-1-1

240 at 1:45 add Shell- 2-2.
Pour off at 5:15. Some Bubbles - Sets Half-hard when cold.

Ent'd P.M.
MAY 24 1912

Review of Shellac mixtures recently made - the numbers referred to are recorded in advance under dates - #

#5-9-12-#4A is Para-chloraniline with acetic-Ether Solution of Shellac & filtered thru acetic-ether evaporated - after the dope has been heated long enough to evaporate volatile matter to the limit which is judged by the fluidity of the dope - after cool cond set is a soft plastic putty-like mass - which becomes only little harder after 14 days.

#5-10-12-#6 - Sample #5 the addition of Tetra-chlor-Naphthalene reduces the putty-like mass to a cream-like-but still tho-plastic for proper consistency - Gummy - at 80° temp.

#5-9-12-#3 - this day sample is Hard & brittle - ~~try again~~

#5-11-12-#2
Acetic-ether-Sol. Shellac with Para chlor-aniline & Dinitro-naphthalene produces a soft gummy Elastic mass -

Ent'd P.M.
MAY 24 1912

#5-9-12-#1
Parachlor-aniline with plain Shellac produces a rather soft elastic mass - but not so soft as with the acetic ether-sol. shellac

#5-11-12-#3
Parachlor aniline with stearic-tartar and acetic-ether sol. shellac produces a clear mass which sets hard - but becomes soft at 80° temp.

#5-10-12-#3
Parachlor aniline filtered shellac with with stearic acid & tartar el. prop produces a compact soft elastic mass - But not gummy - at 80° can be bended back & forth without fracture Might make good wire insulating Material

#5-9-12-#2
Ortho-chlor-Aniline with plain shellac at temp. 280° after 3 hours pour off on glass and allow to evaporate on steam table produces a clear Hard tought Mass

Ent'd P.M.
MAY 24 1912

#5-13-12-#1
ortho-cl-aniline with shellac temp. 410° if heated for 10 hours the mass will not set hard on cooling - nor will it harden after 10 days - remains semi-plastic and a shade gummy.

#5-14-12-#4
Aniline Blue oil with plain shellac Boil for 2 hrs sets to hard glassy brittle mass with Bubbles

#5-14-12-#7
acetic-ether sol. shellac dissolved in xylolene and add stearic acid & tartar el. prop produces a wax-like - gummy - coarse grain - mass -

#5-15-12-#2
Aniline with shellac produces a soft gummy - mass which does not harden after 10 days

Bot'd P.M.
MAY 24 1912

5-15-12-#5
Nitrobenzol with Plain shellac produces a mass very much the same as melting plain shellac and allowing to cool - contains all the Bubbles.

5-15-12-#1
Paraldehyde with Plain shellac produces a soft Rubbery to soft-horny mass - clear - with Bubbles.

Methyl-aniline with Plain shellac produces a mass much the same as plain shellac melted & allowed to cool except that it is not quite so brittle contains much Bubbles

5-23-12-#3
Naphthylamine & Canada with shellac produces a Hard dry brittle waxy mass - with fine grain that seems to not dissolve - Requires a few hrs. to become hard after poured
Try again

Bot'd P.M.
MAY 24 1912

5-23-12-#1
Beta cl. Nap. & Naphthylamine with Shellac produces a Hard - fine texture - brittle mass. Cuts some like Carnauba wax - has no thoughness nor Elasticity - nor Plasticity - Sets cold having fine grain and even surface - at 80° temp can hardly dent with finger-nail

5-23-12-#2
is the Same except that Beta-cl. Nap was used and produced a finer grain structure and is a shade more plastic than when Beta-cl. Nap. is used - other-wise the same -
If the brittleness can be reduced without making it gummy nor Plastic nor overelastic this ~~Dope~~ could probably answer
Try on

#5-24-12-#1

Tetra cl. Nap 5
Naphthylamine 1/2
Shellac 5

Ent'd 3.00 P.M. add
MAY 24 1912

Temp-260° Pour off at 4.10

Show letting bubbles when in liquid state, when cooling shows fine crystals in the next day-inspection shows a grain structure too coarse — and too brittle to cut a shaving—

#5-25-12-#1

Tetra cl Nap- 5
Dinitro-naph 5
Shellac 6

Ent'd P.M.
MAY 25 1912

Temp. 270-300°
at 10.00 Pour off through Rec. [illegible]
[illegible]

#5-25-12-#2

Tetra-cl. Nap 5
Stearic acid 2
Dinitro-naph- 5
Shellac 8

Temp. 270-300°

left to cool over immediately

#5-25-12 #3

Tetra cl. Nap- 5
Dinitro Nap- 4
Shellac- 6

Ent'd PM
MAY 25 1912

Pour off at 11.00. temp 320°

This Dope Hardens on cooling fine structure if poured on thin layer it crystallizes and shortens

#5-25-12-#4

Tetra cl-Nap- 5
Dinitro Nap. 3
Shellac 6

Ent'd P.M.
MAY 25 1912

Pour off at 12.05 - Temp - 318° Filter on mist crystals uniformly coarse shows up which eventually blends to a solid color

Ent'd P.M.
MAY 27 1912.

5 - 7 - 11 - 14 - 1

Tetra Cl. Nap — 5
Sulphur Nap — 2
Shellac — 6

Temp. up to 330° - let lower to 320° 4 after

Camphor Nap. 5
Naphthalamide 1/2

2

Steam-Menthol 5
Sulphur - Naph 2
Shellac — 6

Temp. 370° - let lower to 300° Bubbles - let lower to 240° then the wax separates out - Milk.

3

Tetrach. Nap 5
Sulphur - Nap. 2
Acetic Ether Sol. Shell - 6

Temp 260° Condensing before all Bubbles are eliminated

Ent'd P.M.
MAY 27 1912

4

Tetra Cl. Nap - 5
Slow Steam - 60 5
Parachlorcresol 3/4
Shellac 10

Raise temp. 300° 4 add Shell.
at 3-50° Temp. 310° at 4.50 Surface is full of foam and has to be skimmed

5

Steam-Menthol 2 1/2
Naphthalamide 1
Shellac 3 1/2

Very few Bubbles, temp 290°
at 4.30 Poor off - there was some few Bubbles, could not keep heated longer on account of thickness

Try Steam-menthol - Benzamidine + Shellac - over

Ent'd P.M.
MAY 28 1912

#5-28-12-#1

Stearinaniline 2
Benzaniline 1
Slow Stearate So- 1
Shellac 4
Temp. around 150°

at 2:15 #5-28-12-#2

Stearic acid 5
Yoder's Gamalin
Naphthaline 5
Ed. Cuentis So. Delegrieud 4 oxytolyed 4 1/4
Temp. 310°. at 3:45 strain off the Bubbles

Ent'd P.M.
MAY 28 1912

5-28-12-#3

Rothrochlorantine ..... 30 cc.
Shellac ..... 15 grms.
Temp. 300° filter through linnin & cotton at 3:40 Hilgen
into white dish — put over flame to Evaporate
at 6 P.M. left to cool over night
29th put over flame again — at 9-45 was very thick
and elastic — wonderful and good yield
Rubbery and full of bubbles — add
slow stearate So — ..... 3 grms.
Tutia-ch-hop — ..... 9 "

Ent'd P.M.
MAY 28 1912.

5-28-12-#4

#5-28-12-#4 ..... 3 parts
Plain Shellac ..... 3 "
~~Trout~~ mix.

#5-28-12-#5

Stearic Oxiol 6
Naphthaline 3
Shellac 4
Sal. So- 1/4
Temp. around 300° - let cool over night
29th at 9.00 am. add Shellac 1-1

Ent'd P.M.
MAY 29 1912

5-29-12-#1

Make Solution of Shellac in
Sol. Caustic Soda - Dalaquinsed - the liquid
Prior-lime 1 liquid oz
Water 1 gt.
Shellac 2 oz

Boiler with assistance of Heat 120°
& filter through Strainers of Rice wrapper Cotton
into Hydrochloric Solution of water
1 gal - acid 1/2 oz

at 11.50 # 5-29-12-#2

Sol. caustic Soda - Dalaquinsed 1/2 liquid oz
Water 1 gt
Shellac 2 oz
Boiler at 120° - at 12.40 add another gt water
at 1.05 filter
Hydrochloric Acid 1/8 oz
Water 1/2 gl.
was not enough - make another 1/2 gl.

Ent'd P.M.
MAY 29 1912

5-29-12-#3

Water 1 gt
Sol. Caustic Soda - Dalaquinsed 1/2 oz. Crystals
Shell 2 oz
Boiler temp. 120°

Hydro chloric acid 1/4 oz
Water 1 gl

Ent'd P.M.
MAY 31 1912

5-31-12-#1

Water 1 gt
Sol. Soda water crystals 1 oz
Shell - 2 oz
Water 1 gl
Common Salt 6 oz

2

Water 1 gt
Sal Soda water crystals 1/2 oz
Shell - 2
Temp - 140°
Water 1 gl
Common Salt - 1-2 oz
Make Hot 140° and turn Shell - sol. into
Result is not the same as when salt sol. is cold - when fat the fresh comes out little clear

Ent'd P.M.
MAY 31 1912

5-31-12-#3

Water	1 qt
Sal. Soda water crystals	1/2 oz
Shellac	2 oz

at 2.10 water-so. solu. was 140°
add the Shellac

Water	3/4 qt
Tartaric acid	1 oz

Turn shell sol. into tartaric sol & filter - spread on paper to dry in oven

Sal. Soda Solu. of Shellac same as proportions above and precipitated with acetic acid, the shellac holds the acid so strong that 4 weeks evaporation will not eliminate it - and the lac remains fluid

Sal. Soda Solution of Shellac same proportions as above and precipitated with common salt - then washed in Sulphuric acid solution about 25% produces a creamy powder very fine and is insoluble. will become plastic

Ent'd P.M.
MAY 31 1912

5-31-12-#4

Water	2 qts
Salsodan, water crystals	1 oz
Shellac	4 oz

temp 140°

Water	2 qts
Tartaric acid	1 1/2 oz

Have acid solu. little warm - and turn shell-solu. into it from the filter and stir. it seperates in granular form it may then be allowed to dry in open air or slightly heated - or it may be put into boiling water - the gum melts and compresses the water out. after 15 mi boiling - is allowed to cool and sets hard - like original lac. little darker color.

Sal. So. Solu. of shellac precipitated with an inorganic acid like Hydrochloric attacks the lac gums enough to darken them a dark brown - and will only to become plastic.

I consider it to be novel to precipitate a Soda Solution of Shellac with a fixed organic acid such as tartaric acid, the process is very simple and inexpensive and there is no traces of Soda or acid that remains after washing.

End'd P.M.
JUN 1 1912

#6-1-12#1

Tetra 3
Stearic 2
#5-31-12-#3 5

Temp. kept around 230° - much bubbling at first which disappeared almost completely after 2 hours some gas shows when stirring - which comes from the bottom. Pour off at 11:45 - Coarse grain - waxy

Stearic 3
Naphthalene 1½
Stearic #5-31-12-#4 5

End'd P.M.
JUN 3 1912

Stearic Acid 10
Soda Soda crystals 1/-1-1-2-7:1½

Water
#2 Tartaric acid N.G.

End'd P.M.
JUN 3 1912

#6-3-12-#1

#5-31-12-#2 — 3 parts
Stearate of Sodium (soap stock) boiled in water - add 1 pt. solution of Tartaric acid - let boil 1 time
off liquor and evaporate water - 2 parts
Does not melt to liquid -

#6-3-12-#2

Tetra cl. Nap - 3
#5-31-12-#3 — 4

Bright Yellow - Hard when cold
Melt, Temp. 230° - full of tiny bubbles
Sample on glass pots hard on cooling
add #5-31-12-#3 more 4
& Pentra cl. aniline — ½
Bubbles add another Tetra cl. Nap - ~~½~~
Bubbles add another Pentra cl. Aniline — 1 ~~½~~
" Tetra cl. Nap - ~~½~~
Still there are Bubbles - Temp. 250-260°
#6-3-12-#3
Tetra cl. Nap - 3
#5-31-12-#3 4
Pentra cl. aniline 1
Temp. went up to 360° - add another Tetra 1

Temperature too high - Condensed

6-3-12-#4

Tetrach. Napthalene Boiled into Tartaric solution in water

6-3-12-#5

Tetra cl. napthalene Boiled into Sal. Soda Solution

6-3-12-#6

Pentra Cl. anilene	1
# 6-3-12-#4	3
# 5-31-12 #3. Shellac	4

Temp. around 240°-270°
Some Bubbles - could not eliminate the tiny Bubbles
Product - Gaining - too brittle - Hard enough - Wax like - Not plastic

6-3-12-#7

Pentra Cl. Anilene	1
#6-3-12-#5	3
# 5-31-12-#3. Shellac	4-½

Bubbles - But less than Plain Stearic
Raised temp. to 310° to make more liquid that did not eliminate the tiny Bubbles
Poured off ½ the quantity and added Stearic acid to the balance, that clears off very much of the Bubbles - But makes the product too soft - after 24 hrs. Gaining - Wax like

6-3-12-#8

Synthetic Camphor	½
# 6-3-12-#5	3
Shellac - #5-31-12-#3	4

Temp. 215°-260° Bubbles

6-3-12-#9

Synthetic Camphor	½
Stearic	1
#6-3-12-#5	3
Shellac #5-31-12-#4 (water bleached)	5

Temp. 240°-260° - makes much thinner product
Thru the oven dried bleached shellac. add #5-31-12-#4 — 1 hour
Much less Bubbles - at 240° thickens and Bubbles - Pour off. Plastic & Gaining

Bot'd P.M.

JUN 4 1912

#1 6-4-12-#1

Water 8 oz
Sal. So - crystals 1/4 oz
Shellac 1/2 oz

Boil about 1/2 hr. then pour into Tartaric acid Sol - warm - then wash and Bring to boil in plain water - evaporate water.

#6-4-12-#1 - with Aniline Dye Black - would not prevent Bubbles add a little treated Wha. cl. Wax - slow hardening - Makes Excellent Cutting Quality Wax - But Bubbles

#6-4-12-#3

Water 8 oz
Sal. Soda 1/4 oz
Bring to boiling added
X in daughter Montan wax 1 oz

#6-4-12-#4

1st { Water 4 oz
Tartaric acid 1/16 oz
Montan 1 oz

2nd Water 8 oz - Sal. so. 1/8 oz - boil. turn 2nd into 1st - then wash by boiling in water twice - forms a kind of soap - light & chalky

#6-4-12-#5

#1 { Water 4 oz
Tartaric acid 1/32
Montan 1 oz

#2 { Water (Not made 8 oz
Sal So - 1/8 oz

#6-4-12-#6

Water 4 oz
Tartaric acid 1/16 oz
Paraffine 1/2 oz

Boil 4 add. Sal. so. acid. with Water tried Shellac to it - will not mix

Rec'd P.M.
JUN 5 1912

6-5-12-#1

Melt Rosin in Tartaric acid
Solution & add Sal. Ro. Soda.
until neutral - Hard brittle mass
yellow - Gray - Color

6-5-12-#2

Melt Rosin in Sal. So. Sol.
Boil until fine emulsion is formed. then
add Tartaric acid Solution is neutral, the
product is a soft stickly mass - yellow - Gray color

6-5-12-#3

Mix #6-4-12-#4 lumps - before remelting
#5-31-12-#4 - lumps before remelting
produced Hard brittle mass.
Seems to work good in any proportion
when there is shellac enough to overcome
the brittleness the Bife is to viscous at 260°
Bubbles - add Ortho-cl-aniline - that
makes thinner and does not prevent the
Bubbling - lets little slow - temp 250°-260°
Excess of addition of Ortho-cl-aniline make the
Mass Rubbery - plastic
Fine looking specimen of Mixing Shellac
with a Wax -

Rec'd P.M.
JUN 5 1912

6-5-12-#4

Melt #6-5-12-#2 5 Part
#5-31-12-#4 (lumps) 3 "
Makes Hard Brittle Mass. Rosin like
add Ortho-cl-aniline - Bubbles much
add little tartaric acid - Dont mix -

Looks like good wax mixture

6-5-12-#5
Melt #6-4-12-#4 — 10-5
Stearic Acid — 5
Slow Stearate So. — 2
Shellac #5-31-12-#4 Dont mix -

Looks like good Cutting wax mixture

6-5-12-#6
Slow Stearate So. — 5
& #6-4-12-#4 — 10
Stearic acid — 1
Shellac #5-31-12-#4 Dont combine

Tolue cl. Mag. 3
#6-4-12-#4 6-1
Shellac #5-31-12-#4
would not compound. add a trace of Boric acid
it immediately froths.

Ent'd P.M.
JUN 6 1912

Tetracl. naps 5
Boric acid 1
Steric acid ½
~~Dont Mix~~

Steric acid 5
Boric acid 1
~~Dont combine~~

Water 4 oz
Boric acid 1/8 oz
Heat to dissolve

Steric acid 10
Sol. Co. Saturated liquid 1 oz } — 1½
Water 1 oz }
Water 1

Stir – it forms a creamy mass – tested was alkaline – made more
Boric 1/16 & Water 2 oz – was still alkaline
made more Boric 1/16 & Water 1 & 1/16 of Boric – was still alkaline add Hydrochloric acid sol – until separation takes place

#6-6-12-#1

Ent'd P.M.
JUN 6 1912

Water 4 oz
Sodic phosphate (tribasic) 1/16 oz
Shellac 1/4

Dissolves to Reddish Solution – Precipitate with Tartaric Sol. – if the acid is weak the lac separates out in flakes if strong in lumps or sponge-like the Color is pink – when melted has the color of Sesquioxide of Iron the quality appears to be same as the Plain lac with its Bubbles

Mixes good with Tetracl. naps and with Tetracl. naps. mixed with Steric acid Produces soap the right consistancy – the good shaving quality and compactness But the Bubbles also –

Steric acid after Boiling in } 3/4
Sodium sulphite }
#8-6-12-#1 1

Ent'd P.M.
JUN 1 1912

Water	2 oz
Sal. So	1/4 gr.
Oil Cedar	1/2 cc.
Stearic acid	1/2 gr
Shellac	1 gr

precipitated with tartaric acid
add until neutral -
Evaporate water - melt. Bubbles
and does not become liquid
the addition of little tetra. el. naph
makes it liquid and produces
a mass which does not set hard
on cooling - But is Rubbery

Water	2 oz
alcohol	1 cc
Tetra el. Naph.	2 gr.
Shellac N.S. Bubbles	2 gr

Ent'd P.M.
JUN 1 0 1912

#1

Water	4 oz
Tartaric acid	1/8 oz
Montan after boiling 1/3 add water wax	1/2 oz 2 oz

#2

Water	6 oz
Sal. So -	1/8 oz
Shellac	1 oz

Turn #2 into #1. Stir was acid
add little So. sol to neutralize
and let come to boil and
wash

Ent'd P.M.
JUN 1 1 1912

#1

Water	6 oz
Sal. So -	1/2 - 1/8 oz
Montan wax	1/2 oz
Aniline Blue oil	2 cc.

Water	8 oz
Sal. So -	1/8 oz
Shellac	1 1/2 oz

Rec'd P.M.
JUN 11 1912

#6-11-12-#3

Water	4 oz
Sodium Biborate	1/8 oz
Montan	1/2 oz
Shellac	1 1/2 oz

Boil - add Shellac & montan in small quantities - first the shellac then the montan, it will combine to form a thick emulsion let boil about 15 mi. then add about 4 oz more boiling water and let bil another 1/2 hr. Add montan ——— more 1/4 oz let dissolve & filter through fine linen there was a considerable amount of matter that remained on the filter a mealy-sort of stuff melted it and found it was a mixture of the Shellac & the wax it would not melt to a liquid a portion simply soften in lumps the other portion a wax -

thro down with Tartaric acid solution - the filtered portion it gathers in sponge - like lumps - wash with boiling water - After 24 hrs Cooling throw Equalation of montan

Melt some Paracl. aniline and some #6-11-12-#3 allow to condense to proper hardness Will #6-11-12-#3A

Slow Stea. So - with #6-11-12-#3
Will #6-11-12-#3B

Dont seem to combine well, a little lumpy But very smooth cutting quality - too much wax. good smooth effect to touch

Rec'd P.M.
JUN 11 1912

Water #6-11-12-#4 6 oz
Sodium Biborate 1/8 oz
Shellac 1 1/2

Ent'd P.M.
JUN 1 1 1912

Water 10 oz
E. Caustic Soda 3 3/4
Montan wax 1 oz
Saponification was not complete.
Successful — wax not dissolved in
water to compact solution remains
grainy —

Water 20 cc.
E. Caustic Soda 20 grm.
Montan wax 20 grm.

Ent'd P.M.
JUN 1 2 1912

6-12-12
1

Water 4 oz
Sodium Bibrate 1 "
Shellac Boil for ½ hr - 4 add ½ "
Montan Boil for ½ hr and add ½ "
Stearic acid ¼ "

Stir well, this addition thicken the solution and sets quickly on cooling to the sides of the pan - looks like proper combination

Take of the fire - let cool —

Mark Tartaric acid Solution —
Water 2 oz Acid ½ oz

1½ oz of the acid solution diluted with more water brings up a waxy material — filter and keep separate

(This amount makes solution acetic)

Add more acid to the filtered liquor ½ oz acid to 1½ water — more waxy material is brought up - similar to the 1st

add 1/4 oz more of acid diluted with 3/4 oz water more flakes is drawn out of solution - filter this time the stuff is much more compact and resin like - brittle

Add another 1/4 acid - not much effect - add ½ more and this time a fine powder-like material is precipitated

over

Melt some of the 1st filtered - add little water - some montan separate out to float the gum stays down after few minutes an emulsion is formed again - thro it out

Remelt more of 1st filtered & let water evaporate out - a dark scum floats on top - tested it and is not plain Montan - is gummy enough to form threads when the water is all off the mass will not liquify thin enough to pour, does not bubble much but holds together like paste - the addition of stearic acid does not combine to make more fluid - it lumps the gum and forms a separate portion which is liquid - the right consistency. poured off some of the fluid portion - after set and cold found it to be of Excellent quality it cuts a fine smooth shaving extremely compact - will number

6-12-12
#1A

Ten hours later the sample has altered from hard-like cutting quality to a brittle-dry

Melt some # 6-12-12-#1 when portion of the water was evaporated but still bubbling much - add about 1 to 2 oz in excess after bubbling has disappeared tested a sample when cold, show to be Montan like quality hard & brittle - coarse grain - add some more # 6-12-12-#1

6-13-12 at 2 p.m.

try to dissolve # 6-12-12-#1 into liquids
#6-12-12-#1 Xylidine
#6-12-12-#2 Acetone

Ent'd P.M. JUN 13 1912

6-13-12
#1

Water	40 cc.
Bicarbonate Soda	1 oz
Japan wax	1

Boil 10 min. begins to thick to bottom account of thickness add more water 80 cc

Bring to Boil - add Shellac 1 1/2 oz

Boil 15 min. add gradually

Cold water 50 cc.

this liquify the solution so much that the unsaponifiable matter is driven to float on top - melt this matter and weigh - Jap wax 3 oz 7 and hard matter 4 oz 9 - Separate the solid from solution with Tartaric acid. Stronger in acid is required

Ent'd P.M. JUN 13 1912

#6-13-12 #2

Water 2 oz
6-13-12 Bicarbonate Soda 1 oz
Yellow Ceresin 1 oz
E. Caustic Soda 3/16 oz

Here a separation is effected a ceresin like wax and a Very Hard Gum - soluble in water.

#6-13-12 #2B
In other Pan water 6 oz
Bicarbonate Soda 1/4 oz
Shellac 1/2 oz

Bring to boil & filter. Makes emulsion that does not separate, hot or cold. Make Solution 1/2 oz. formic acid water 1 qt and precipitate & filter & Dry will be #6-13-12-#2B 7.

Water 1 oz
Bicarbonate Soda 1 oz
Stearic Acid 1 1/2
E. Caustic Soda 3/16 Mix.

~~Dinitronaphthalene~~ ~~5 gr~~
~~Ceresin~~ ~~5 gr~~

Dinitro Nap- 1
Stearic acid 1
Shellac #6-12-12-#1 3-5-5-2
Naphthalene 2
Nitro ch. nap- 2-2

Naphthalene 2-1
Dinitronaph. 2
#6-12-12 #1 4-3
Slow Stear-Soda 1/2-1/4
Nitro-ch. Nap 2
Gummy - Coarse Brown

Ent'd P.M. JUN 17 1912

#6-17-12 #

Aniline Blue oil 3 cc
Stearic acid 5 gm.
Sal-Soda 1 "
Warm Water 1 oz 40 cc.

#1 Water 6 oz
Soda-Bicarbonate 1/4 oz
Shellac 1/2 oz
mix #1 with #2 - combines

#3 Water 1 qt
Formic Acid 1/2 cc.
Separate from Solution with #3 - filter & melt - Bubbles - Hard and tough similar to Blonde Shellac

Aniline Blue Oil 3 cc
Stearic acid 5 gm.
Sal. Soda - 1 "
Water - Hot - 50 cc
~~Don't combine~~

Entd P.M.
JUN 17 1912

Tank Cannabis	5 cc
Edis. Caustic So.	5 "
Water	100 cc

Boil — add #6-19-12-#3
Boil. - Separate with formic acid
Neut. filter. Melt - Dont combine

Montan	5 cc
Lab. Stea. So. (Powdered)	½ "

Montan	8 cc
Cannabis	2-3
Silicate	4
Lab. Stea. So.	1

Temp. - 380° add the So. So. then up to 410° clears in about ½ hr.

Stearic acid
fuse d
+ Shellac produces a
Rubbery mass. might answer
as a substitute for Rubber used in
Mfg of celluloid Records

Entd P.M.
JUN 18 1912

Coagulation of Shellac

The following Experiment seems to prove that an acid will coagulate Shellac —

#6-18-12-#1

Dissolve shellac in 1½ oz
Bi borate of Soda ½ oz
in Water 6 oz

when well dissolved separate the shellac from the solution with very weak sulphuric acid solution —
melt the sotreated shellac
if all the acid is not all washed out it coagulates very quickly — if the treated shellac is washed with weak alkaline solution (Carbonate Soda) it will not coagulate so quickly in fact some has been over heat at 340°-240° F. for 2½ hrs. it bubbles but does not seems to thicken much with prolonge heating.

Bd'd P.M.
JUN 19 1912

#6-18-12-#1 — 2 Parts
Yellow Cl. Nap — 2 "
Does not Combine — mixes by brisk stirring and sets hard enough but coarse grain — the proper horny cutting granularity is withheld — and may be obtained more or less hard by more or less tempering — there are bubbles when in fluid state consequently they appear in the Dope when it is cooled and set

In Every Case I have observed that when the Dope is in fluid state if there are bubbles no matter how small the resulting mix when cooled and set shows a coarse grain — unevenness of the ingredients or crystallizing or hardening of the mass is not simultaneous which results in the coarse grain or what appears to be so with Magic Glass — such mixtures are unsuitable — the cutting Stylus does not cut without hissing noises and reproduces the same —

#6-18-12-#1 — 2 Parts
Stearic acid — 2 "
Does not Combine — mixes with brisk stirring, sets when cold more or less hard — not quite the same tenacity — is little more wax-like when more stearic acid is added a rubbery mass is the result — which remains Elastic a considerable time

#6-18-12-#1 — 2 Parts
Stearic acid & Yellow Cl Nap in Various proportions does not combine mixes by brisk stirring and the Dope when cold & set produces a more or less hard though mass much similar to the mix of simply Stearic acid & Yellow Cl. Nap. & shellac —

#6-18-12-#1 — with wax as will mix after long heating & stirring and coagulate the shellac as combination takes place — can not render fluid have tried Carnauba wax. Montan & Bay

The Japan wax — Spermaciti — Cerasin & Paraffin & Bayberry will not combine nor mix by brisk stirring

Rec'd P.M.
JUN 19 1912

6-18-12-#1 with fuel oil combines and becomes fluid will take up any amount - the more oil is added the more Elastic is the resulting dope

6-19-12-#1

Commercial Blank wax — 2 Parts

A # 6-18-12-#1 — 2 "
Dont Combine -

with Para phenetidin

B Combines to form a Sticky mass
Sticks to anything

with Butylic alcohol

C Combines to form Rubbery mass
Dissolves slowly

with Paraphenetidin & Carnaba wax

D combines - wax thickens it and make mass less sticky but not firm enough -

with Paraphenetidin + Stearic acid

E Dissolves with evolution of gas Combines - Clears form fair mass - little sticky - try again

F with Paraphenetidin & Lettuce cl. Wax
combines - forms soft finish mass
T.L.D Bubbles Clears separates
to grainy structure on cooling

G with Paraphenetidin & Japan wax
- Does not mix well.

H with Paraphenetidin & Comm. Blank wax
Mixes with much circulation or gas
Tendency to form Bubbles at finish if stirred
Dont combine

I with Paraphenetidin & Bay wax
Mixes very slowly Dont Combine
Separates absolutely on cooling

J With Paraphenetidin + Mastic wax
Dont mix

K With Para phenetidin — 3 cc
commercial Blank wax — 2 gm.
Heat on a hot temp 350° - 370° - Covered to
Condense Vapors - Pour off and let cool -
take of this — 2 Parts
6-18-12-#1 — 2 "
temp 240° - ½ hr. When cold mass is soft & sticky

See Next Book

Entd .M.
OCT 1 6 1910

Patterns #'s 668-L
666-L & 667-L
for Casting Machine

Entd .M.
OCT 1 4 1910

Pattern # 669-L
for Melting Box

Pattern #'668-L Base
for Melting Box.

Entd .M.
SEP. 2 9 1910

Composition Castings from
Patterns #'s 656-L & 657-L
658-L & 660-L

Entd .M.
OCT 4 1910

Iron Castings from
Patterns #'s 661-L
662-L
663-L
664-L

Patterns for Large Record, (Grand.)

? Change No.

Patterns #107-E for Head-stock of Winding and Coating Machines

Patterns # 122 E Lab # 128 E Lab And # 124 E Lab

1. Iron Casting from Patterns # 658-L

Chlorination Dope Samples Hanes:

Halo wax #60 yellow — is Hanes Ch. map.
" " #60 Black Rec. " ".

[ITEM FOUND IN BOOK]

Wilson

Please forward

Patent one

Showing Machine

+one blank mould

Edison

[ITEM FOUND IN BOOK]

Pshut = anything you want made I will push it thru

E. Stein

Stone 4 810
So " 2
1/2 1 2 1/2

Stone 100 1st
" So 75 Temp 300°
Remelt Temp 400

Stone 10 2nd
" So 2 Temp 3800
Remelt Temp 2600°

Ston 10
" So 1 1/2 #3 "
Remelt 2400

#4
Ston 10 #4
" So 4
melt So. 1st add little Sto to start
3200°

Notebook, N-12-06-19

51630
Acme Co.,
MFG. STATIONERS,
95 JOHN ST.
AND
19 PLATT ST.
NEW YORK.

Book #2
Hard Record Blank.
Experiments

Rec'd P.M.
JUN 19 1912

Treated Shellac according to formula #6-18-12#1 in preceding B work

#6-18-12-#1 with Phenylendiamine forms crystalline mass - but the proper conditions, with some Stearic acid - these seem to be a combination. Obtain a mass that hardens clear as glass and brittle - by adding more stearic which seems to go in any proportion I obtain a waxy mass - Hard & dry cutting - want more tenacity - try

#6-19-12#1

Stearic Acid - temp. 350°-370° 10 Parts
add Phenylenediamine 2 " "

Heated for 5 hrs. Result = a waxy mass - almost Black - fine structure - very fluid at 380° - No Bubbles - sets hard on cooling - Remelts only at high temp. 370°

Try Heat & melt
Phenylendiamine &
Stearic acid
after 6 hrs. heating - is gummy when cold

Out'd P.M.
JUN 20 1912

6-20-12 - #1

[illegible] 3
[illegible] 1/4

6-19-12-#1 2 Parts
" 6-19-12-#1 " 2 "

Condenses too quickly - does not become viscous enough to pour - a small sample upon glass shows shine, shrinks and appears in combination - not tenacious - clay. Hard enough if it had tenacity. Not sensitive to heat, has contraction does not stick to mould

Out'd P.M.
JUN 20 1912

6-20-12-#2

#1 {
Water 100 c.c.
Biborate Co. 10 gm.
Shellac 20 gm.
Bring to Boil - 15 min.
turn into cold water 400 c.c.

#2 {
In other Pan cold water 600 c.c.
Sulphuric Acid 3 c.c.

Filter #1 through fine linen twice first + some fatty matter remains on filter.

Turn #2 into #1 stirring briskly after separated filter and wash by heating - the lac contracts lets go the water pour off and add fresh water where again Hot repeat with fresh water - evaporate last traces of water the lac melts to thick mass - temp 210°F.

Stiff is almost black and has not the toughness of plain Shellac - is hard but graining

Rec'd P.M.
JUN 20 1912

#6-20-12-#3

#1
- Water — 100 c.c.
- Biborate So. — 10 c.c.
- Gum Thus — 2 c.c.
- Resolva
- Shellac gradually — 20 c.c.
- Boil about 15 min.
- turn into Cold water & filter — 400 c.c.

#2
- Water — 500 c.c.
- Sulphuric Acid — 3 c.c.

Turn #1 into #2 stir briskly
filter — wash by heating in
pan using fresh water
Stirring — evaporate water
melt lac — Bubbles — Clears
after few minutes except very tiny specks
lets to Hard brittle mass — not so tough as
Plain Shellac — Clear — continued heating
forming more tiny blisters — add steam and
sample shows a horny mass — too much —
becomes thicker — condenses — fusel oil
does not thin it much — generates more
Bubbles and Result is Rubbly mass —
with Cannabis — Condenses quickly Does not
combine with gum —

Rec'd P.M.
JUN 20 1912

#6-20-12-#4

- Water — 100 c.c.
- Biborate So. — 15 c.c.
- Gum Elemi (Manila) — 5 c.c.

the Elemi wont Dissolve.
Shellac — 20 c.c.
add some lac gradually until
all is taken up, the Elemi seems to coagulate
a large portion of the lac — add water 50 c.c.
The Elemi goes to the bottom as a thick
Emulsion — add water — 50 c.c.
Does not go into solution — add
Denatured alcohol — 5 c.c.
this seems to effect a combination
The thick stuff from the bottom
mixes and brings up a small portion
of froth to the surface, tested by
cooling found it to be a gum soft
but not sticky — add Water 100 c.c.

Rec'd P.M. JUN 22 1912

#1
- Water 450 cc. 1 kg.
- Biborate So. 2 gr. 1/16 oz.
- Shellac 11 gr. 3/8 oz.

Eugenol about 1 Part
Mortar
Ed. caustic So. little at a time
or until a sample on glass
#2 looks and acts Plastic about the
Consistancy of B's wax. - add
more Ed. Caustic So of water until
quite liquid

Pour #2 into #1

#3
- Water 500 cc.
- Sulphuric acid 5 cc.

Pour the above mixture
into #3 - filter. wash
with water times - Evaporate
water - melt.

Rec'd P.M. JUN 22 1912

#1
- Water 45 cc.
- Biborate So. 2 gr.
- Shellac 5 gr.

#2
- Water 45 cc.
- Sodium Phosphate (dibasic) 5 cc
- Shellac [illegible] 5 gr.

after 45 min boiling add water 45 cc.
Boil 20 min - & filter through
fine linen - some remains on
which looks like wax formed soap.
Put the filtered portion on to boil again.

After 5 min turn #1 into #2 - Boil again
later Pour in 100 cc of Solution of
Sulphuric acid 2 cc.
Water 250 cc.
this Solution separates a gum
from the Stearic acid -
Wash. & Remelt - Sample when
cold shows grainy structure -
wax-like cutting - Dont resist scratch
more than Mutton-wax - But more plastic
looks like a mixture of a portion
of the Shellac

Rec'd P.M.
JUN 24 1912

Water 150 cc
Formic acid 1 cc
Shellac 3 gr.
Does not Dissolve

6-24-12-#1

#1
Water 500 cc
Biborate So - (should be 30) 50 gr
Shellac 100 gr
Boil until lac is all dissolved
and add Hot Water — 500 cc.
(Let stand overnight — next morning heat to boiling & then allow to cool before filtering)

#2
Sulphuric acid 25 cc.
Water 1250 cc.

Turn #1 and #2 into another Pan by pouring one into the stream of the other so that it mixes before it reaches the 3rd Pan -

#3
Boric acid 5 gm
Water 250
Heat

Mix #1 with #3 - there is no seperation - in fact it seems to promote solubility

6-24-12-#2

Boric Acid 2 gm
Water 50 cc.
Shellac 10 gm.
would not dissolve Shellac
add Biborate So - 3/4 gm.
& water 30 cc.
the amount of Biborate added is just enough to neutralize the acid - which now Dissolves the Shellac
A small portion rises to the surface which is the exact color of the Shellac - the Solution color is a blend of Pink & Brown -
Add — water — 2 oz.
Boil 25 minutes & filter —
found the largest portion on the filter undissolved - add more Biborate 3/4 gm.
Bring to Boiling - & filter - some remains on filter undissolved - not much
Put back on flame and add Boric acid 3 gm & water 80 cc.
this makes the Solution more Milky and some insoluble portion of lac seperates to float on top, skim it off. Cooled the Solution - will

Continuation

not separate - add see water about 150 c.c. solution simply becomes thinner and appears to be a thinner one. add Acetic acid - gradually 4 c.c. Stirring briskly. Separation takes place - but black over glaze as soon as warm the lac gathers in spongy - like form. Melt in water - during to test - 15 times to wash out the acid and then the water acid Cobalt litmus paper -

Melt slowly temp around 220°-240° All Bubbles were not eliminated - But is a considerable improvement - at first the Bubbles are plentiful - but clears after a time - a sample upon glass show a very good and clearer mass than any thing yet considering the Hardness - toughness - too pliable for Record cutting add some Stearic Acid which had been over the flame for about 1 hr. to evaporate Volatile matter - it seems to combine - added the Stearic little by little up to the point when a sample upon glass showed the proper cutting consistancy ——

and then was not decided enough to pour off freely - between sticky force - bubbles - little froth.

Condensed after short time - about 3½ hr.

Boil # 6-24-12-41 into sodium chloride solution into which is add a little Sol. Caustic Soda Enough to turn litmus paper slightly - this is to draw out of the Shellac any free acids - and wash with water to boiling

Rec'd P.M. JUN 26 1912

WASHINGTON NOV 12 1912 N.Y.

#6-26-12-#2

Boil Stearic Acid in Sodium Chloride Saturated.

Eh 10 P.M. Solution into which is added

JUN. 26 1912 Bubbles Sod. Caustic Sol. - there this down with Glycerine acid and cook with water to boiling.

Filter out water and Evaporate produces a stearate of Potash color which produces the theater shellac But the little tiny bubbles are continually coming through the Paper when in melted state.

Stearate of Shellac 2 p.c.

The melting Soap after cooled & set is of very good cutting quality - after 24 hrs turns out Bitter, too hard for the purpose cannot scratch with the finger-nail: Good structure.

Try again with equal parts.

not made

#1
- Water 50 c.c.
- Sod. Caustic Sol. 5 gm.
- Stearic Acid 15 "
- Boil & add water 200 c.c.

#2
- Water 50 c.c.
- Biborate Soda 5 gm.
- Shellac 20 gm.
- Boil & add water 200 c.c.

Turn #1 into #2 bring to boiling & filter

#3
- Water 500 c.c.
- acid

turn #3 into above mix by pouring one into the other stream so that it mixes on its way down

Ent'd P.M. JUN 27 1912

#1
- Water 80 cc
- Ed. Caustic Soda 4 gr.
- Olive oil 29 c.c.

Heat moderate after 1 hr. added
Hot water 150 cc
after another hr. turn into #2

#2
- Water 300 cc
- Biborate Soda 5 gr
- Shellac 20

2½ hrs. from the start filter and precipitate with solution #3

#3
- Water 400 c.c.
- Sulphuric Acid 4 c.c.

Turn gradually #3 into the first mix here 3 solids seperates - a thick glutinous mass - an oily mass on top and a spongy mass at bottom

Melt the glutinous mass - Bubbles much - a sample on glass shows a soft Rubbery Dope - Bubbles go on forming after 2 hrs. Heating

Ent'd P.M. JUN 27 1912

- Water 100 cc
- Ed. Caustic Soda 5-5-5-10 gm.
- Jar Oil 25 cc

Boil 45 min. became thick
Solution cool then gathered in lumps add Hot water 50 c.c.
the lumps travel back to thin liquid
- Water 100 c.c.
- Sulphuric Acid 10 c.c.

A mixture of oily matter and a glutinous matter rises to the top - Pour off liquor wash with cold water and finely with a Solution Sulphuric 5 parts water 50 and again with water what remains has the appearance of dark brown thick viscous mass - Melt this to Evaporate Volatil matter a sample upon glass shows attendency to Condense - take of this 2 Parts
- Shellac 1 "

Bubbles much at begining and thickens after a while clears some & bremosthinner Bubbles sticks in form of froth - When it is thin enough to pour its too soft when hard enough is too thick -

Rec'd P.M.
JUN 2 8 1912

Water 25 cc.
Bicarbonate Soda - 2½ grm.
Carbonate Soda - 1½ "
Gum Ellemmi 10 grm.

The gum dissolves slowly add
gum water gradually - Keep solution thick 25 c.c.
by stirring the gum is dissolved the water
is much reduced add more 25 cc
Lumps formed go to and in suspension
throughout. add Denatured alcohol 5 c.c.
alcohol dissolves lumps, gum into fine
state of division but not true solution -
Add Shellac 10 grm.
Results quite some. Keep on stirring
the bubbles gradually disappear the
solution becomes more dense about
the consistency of Honey - add water 75 c.c.
Boil until evaporated & add " 25 c.c.
Boil all together 3 times 4 times into
Water 250 cc

Precipitate with Sulphuric acid solution
only a small portion seperated the
Balance was inseperable with all
acids. the portion which seperated
would not remelt to a fluid

6-28-12-#2

Rec'd P.M.
JUN 2 8 1912

Water 20 cc
Sodium Carbo - 1 gr
Shellac 5 gr

Started to boil 3.40
at 4.40 add water to liquify 400 cc
add Formic Acid to precipitate 5 c.c.
Evaporate water

#1
Water 20 cc
Ammonium Carbo - 1 gr
Shellac 5 "
Started to Boil at 3.45, Continue to boil
at 3.40 add warm water 50 cc.
Cover off to allow ammi. Escape

#2
Water 20 cc.
Amm. Carbo - 1 gr
Stearic Acid 5 "
add Stearic acid slowly - it forms much
after all taken up add water 20 cc
then turn #2 into #1 and let
come to Boil

#3
Water 100 cc
Formic Acid 1 cc.
Turn #3 into mixture. only a portion of the lac is thrown
down. a considerable amount of fat comes to the top
Skim off - Remelt lac. #6-28-12-#3

Ent'd P.M.
JUN 29 1912

Lithium ch. Nap — 1 — 5 grains
Ammonium Carbonate 1/8 - 1/4 - 1 gr.
Sulfoc 6 gr.
Fol. Not Cocaine

Water 25 c.c.
Ammonium Carbonate 1 gr.
add little Phenylmethylamine

[illegible] 2 gr
2-28-12-#2 1/2 - 1/32 "
[illegible]methylamine 1/2 "

Water 50 c.c.
Sulphate Soda 10
Calline-rackers Lime 10
#1 after 1/2 hr. boiling the Fungi. is usually not dissolved - add water known 50 c.c.
then add the glue
Monday July 1st Repeat — Add water 50 cc

#2 Water 200 c.c.
Hydrochloric Acid 5 c.c.
turn #1 into #2 — precipitate white flocculic mass.
add Zinc white. Reprecipitate and after while seems to dissolve

Ent'd P.M.
JUL 2 1912

7-1-12-#1

Water 200 c.c.
Tungstate Soda 10 gr
Cab. Blue 10 gr
Basil 10 mi. add -
Ed. Lime 5 gr

Water 100 c.c.
Hydrochloric acid 1 - 6 c.c.
A Powdery mass is thrown down

7-1-12-#2

Denatured alcohol 50 c.c.
Stearic Acid 20 gr
Carbonate Soda - crystals 5 "
when all dissolved add Sul. acid 5 c.c.
Alcohol & Soda is probably thrown down

7-1-12-#3

Alcohol (Denatured) 5-10 c.c.
Carnauba wax 5 gr.
Ed. Cumeti do 1/2 "
after 1 hr. add Paracauline 1-1 gr

Carpet oil Dissolves Shellac
produces Rubbery mass - more plastic then Elastic

Hut'd P.M.
JUL 1 1912

Tetra el. Soap — 5
Lab. Stearate Co. 2
Shell — 5

Stearate too strong in Soap the melting point so high that Shellac commences to melt before melting to fluid.

Hut'd P.M.
JUL 2 1912

Montane Wax 2 gr
Japan wax 2 "
Lab. Stearate Co. ½
after ½ hr. evaporating add Naphthaline 1 "

Stearine could be soft plastic mass.

Montan wax 2
Stearic acid 1 — 2
Carnauba wax ½
6-28-12-42 1 - 1 - 1

the Shellac precipitates - deposits

Stearic acid 3
Montan 2
Ceresin 1
Separation on cooling and
Lab. Stearate 2
Clear if on cooling and after add
Shellac 1
Soap not combine add
Naphthaline 1
Acid not Combine

Water 50 c.c.
Lab. Stearate Co. ½ gr.
Hot treatm - add Ammonia ½
Alk.

Carnauba wax 2 gm
Dinitronaphthalene ½ "
Shellac # 6-28-12-42 1
Hot combine

Bat'd P.M.

JUL 2 1912

Phenanthren mixes. with
Carnaba wax to reduce its
brittleness #7-2-12-#7
Carnaba wax 2 gr
Phenanthren ½ "
Result. Growing Shellac -

Bat'd P.M

JUL 3 1912

#7-3-12-#1
Tar oil
Nitric acid
bring to boil
Wash in Caustic So. Solution
Nitrate again
Wash in caustic So. Sol. to
the boiling - pour off liquor
& wash again with water
Evaporate water

#7-3-12-#1 2 gr
Bubbles much - like froth -
Add Carnaba - ¼ gr
froths much more - Sol.

Bat'd P.M.

JUL 3 1912

Stearic acid 12 gm.
Naphthalene (melt & add) 6 "
Shellac (Dissolve & Saponify) 12 "
Carbonate So. (Crystals) 7 3/4 "
after ½ hr. add Shellac - 12 "
Keep temp. between 220° & 230°
would not combine the Shellac would stay
at the Bottom and the Stearic above. add
Trichlor-ethylene 1 oz.

2.15 PM Stearic acid 6 gr.
Phenanthren (melt & add) 2 "
Shellac (Dissolve & Saponify) 6 "
Carbonate So. - (crystals) 1 1/4 "
Temp. 160° after 1½ hrs. warmed
combined add Trichlor-ethylene ½ oz.
½ hr. later add Shellac 6 gr.
Bubbles - Pour off at 4.45

Tetra di Nap. - Stearic acid - Trichlor-ethylene &
Shellac - look like combination - But Bubbles

Ent'd P.M.
JUL 5 1912

[illegible] 100 cc
Sodium-Ammonium-Phosphate 5 gr
[illegible] 5
Borax not Borolin —

#7-5-12-#2

Water 100 cc.
Sodium phosphate (Trihasic) 5 gr.
Does not act [illegible] - filter

Water 100 cc.
Sodium [illegible] (Bi-basic) 5 gr.
Insoluble acid
Cam[illegible] 5 gr.
Triple [illegible] 1/2 hr. Boiling add
fill [illegible] 100 cc
Spreads out more but does not [illegible]
add Denatured Alcohol 5 cc.
does not show any effect - add
Sodium Chloride Solution - about 25 c.c.
this makes a clearer solution -
[illegible] 20
Shellac melt to flocculent mass -
add Sodium chloride solution 25 c.c.
Solution is now Neutral - Pour off
and wash with water & melt to evaporate
last traces of water. Very Heavy Bubbles add Stea. acid 10 gr
Cooled not clean the Stuff - [illegible]

Sample showing poor impurities
Stuff - No Tenacity

Ent'd P.M.
JUL 5 1912

#7-5-12-#2 —
Shellac 10 Pounds
Master-Way. 4 "
Boil add water 100 "

Water about 200 c.c.
Tartaric acid (limit) 3 gr.
Precipitate & wash with Boiling
water 3 times - when neutral -
melt to Evaporate last traces of water
temp. 220-230°-240°

4 P.M. Water 250 c.c.
So. Phosp. (Trihasic) 5 gr.

Shellac 10 gr.
Light Carnauba wax 4 "
Boil wax floats long time - some seems
to be taken up - froth is produced
and the wax becomes colored pinkish.
after 1½ hr. Boiling no more wax can be seen
floating - looks as if all taken up. add more
water to make more fluid to filter - the
addition of water bring out some wax - let stand
over night - filter - when wax was dried weighed 5 gr.
when melted weight 4 gr. Smell somewhat

Hut'd P.M.
JUL 6 1912

Water 200 c.c.
So. Phosphate (Tribasic) 10 gr.
Boil 1/2 hr. would not all dissolve
add water 100 c.c.
Some particles could not dissolve add
So. Phosphate (Tribasic) 10 gr.
Heat to Boiling & add
1.30 Light Carbola Wax 5 gr
the Solution is now small alkaline
10.30 whatever liquid that remains is more
is all in the Wax which is like
thick emulsion
10.45 add Boiling Water 250 c.c.
the Emulsion gathers in a mass at Bottom
Boil - The stuff seems to dissolve - is less
alkaline to paper test. add Shellac 5 gr
only about one part to begin with the
Solution reddens immediately. the
waxy stuff breaks up to smaller pieces -
11.30 The whole thing now looks like a perfect
Solution - with exception of a little scum of froth.
add water - cold 50 c.c.
this brings up out of solution only very
little waxy or fatty matter - Solution
feels at 2/12°
11.40 froth is now all disappeared - allow to cool -
or scum of waxy or fatty stuff comes to the surface - not much.
(when wax was melted weight 5 gm.

Hut'd P.M.
JUL 6 1912

#7-6-12-#2
In large pan
Water 2000 c.c.
So. Phosphate (Tribasic) 50 gr.
Heat to 160° + add
11.15 add Shellac (all at once) 200 gr
Stir - treebins in 20 mi.
Solution is Red - little froth on top - left
" Cool over over Sunday ——

There was a scum of fatty stuff -
filter through paper -

Hut'd P.M.
JUL 8 1912

Formic Acid Solution - Acid 1 Part
Water 2000
2½ parts of this acid solution will
seperate the solid from 1 Part of
the above Shellac Soln. #7-6-12-#2 But
in very thin Gloulent form. & when
this is heated a small portion comes to the
top and the Balance seems to go into
solution again.
Common Salt Saturated Solution (normal temp.)
200 c.c. precipitates the full portion above.
evaporate to thinest by heating - when cold set aside
When water is all evaporated the mass
shows a crystal salt seperating from the face.

Ent'd P.M.
JUL 8 1912

7-8-12-#1

Water 250 - 250 - 250 — 500 c.c.
so. phosphate (tribasic) 13 gr.
Shellac 57 gr
let cool over night —
is not liquid enough to go through filter paper - must have more Sd-phosphate.

7-9-12-#2

#7-6-12-#2 — 5 gr
Stearic Acid 3 "
Makes pretty compact and of the proper consistency - Some air Bubbles.

Stearic acid 5
So-Phosphate (tribasic) 2
7-6-12-#2 3

Ent'd P.M.
JUL 9 1912

Orthochloroaniline 50 c.c.
Shellac 20 gr.
Heat 250°
let it rest in oven 1 hr.
Added Stearic acid & more shellac
turns out too gummy - plastic -

Stearic acid 5 gr
Amm. Carbonate 1-1½
Shellac 6 "
Bubbles

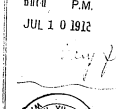
Ent'd P.M.
JUL 10 1912

Stearic Acid 1-5
Manganese Acetate 2
Shellac
Coagulates

Ed. Martin wax 5 gm.
7-6-12-#2 2-5 "
Melt - Bubbles much add
acetone 2 c.c.
Bubbles - more - add
acetonchile 1/2 gr.
Bubbles just the same

Tetra chlorap	5 gr.
Stearic Acid	2 "
Camphire	1/2 "
Shellac #7-6-12-#2	6 "

Very full of Bubbles



Water	100 c.c.
Potass - Sulphate	1 gr
Shellac —	

Does not Dissolve

Water	100 c.c.
Hypophosphate	1 c.c.
Shellac —	

Does not Dissolve

Amm. Rhodanat	2 gr
Stearic acid	2 "
Shellac	5 —

Phosphoric acid	10 gr.
Water	100 c.c.

Phosphor - acid Soln.

7-11-12 - #2

Water	100 c.c.
Sodium phosphate (tribasic)	2 gr
Shellac	8 "

Boil — and add

Xylidine	2 c.c.

Boil — 15 min & filter

Too thick to filter should have more water or the Xylidine approximate to the max.

Hypophosphorous acid - Soln.	40 cc
Water	160 cc

Precipitate - the resulting liquor turns Brick

Put Back on heat to bring to Boil then Pour off liquor & add fresh water to wash.

Melt - Bubbles - add

Stearic acid	2 gr
Syn. Camphor	1/2 "

Entd P.M.
JUL 1 1 1912

7-11-12 #3

Water	250 cc
Carbonate So-	8 gr
Shellac	12 "
Boil 10 min & add	
Stearic Acid	5 gr
Syn Camphor	2 "
Phosphoric acid Sol-	125 cc
Water	125 cc

To reduce the bulk of Boil pour off liquor & add fresh water and bring to Boil - pour off Evaporate liquor & Oil reduce to quite & clear liquid - the liquid did not much Bubble - above the liquid yet so far as the fluidity - Becoming - heavy mass - Ice Soft -

Entd P.M.
JUL 1 2 1912

7-12-12-#1

Stearic Acid	20 gr.
Glycerine	10 cc.

Heat to 300° for 1½ hr.
Acid now weigh 1½ gr. more.

#7-12-12-#1	5 gr
#7-6-12-#2	5 "

7-12-12-#3

Water	1000 cc
So-phosphate	18 gr
Shellac	8 "

The So-phosph would not dissolve - tested with litmus paper it showed to be alkaline - neutralized it with Phosphoric acid - then added Shellac - when about 3 parts had been added the solution turned acid - neutralized it with Caustic Soda - add more shellac and the solution again turned acid - add more Caustic Soda for every portion of shellac added - it required some Soda to bring it neutral.

Entd P.M.
JUL 13 1912

Water 100
So. Oxalate 4
Shellac 8
[illegible]

7-13-12-#2

[illegible] 25 cc
Glycerine 5 cc
So. Borate 1 gm
Boil - let evaporate water - High temp.
After about 2 hrs. all the water is eliminated and the mass becomes very fluid & clear - no signs of bubbles.

7-12-12-#3

Large Stoneware Crock
7-12-12-#3 50 cc
Glycerine 50 cc
Let Evaporate

7-15-12-#3

Water 50 cc
Dextrine 1/2
So. phosphate (tribasic) 1
Shellac 4
Let cool & filter - Evaporate water - Bubbles - much & Separates -

Entd P.M.
JUL 15 1912

Acetic acid 10 cc
Glycerine 10 cc
Heat up to 260° & [illegible]
Forms liquid wood Brown Shellac

Water 125 cc
So. phosphate (tribasic) 2 gm
Mountain wax 1 "
Boil - does not Dissolve - add
Glycerine - Nothing doing - add 1 cc.
Denatured alcohol 3 cc
Shellac 6 "
Milk Boost Mix

Water 50 cc
C. Starch 1/2 gm
So. phosphate (tribasic) 1 "
Boil & add
Shellac 4
Starch Separates on Cooling

Rec'd P.M.
JUL 15 1912

#7-15-12-#4

Stearic acid 10
Sym. Camphor 10
So. Phosphate (Tribasic) 3½
#1 After 1 hr. Heat 260°-270° - add
Water 40 c.c.
This makes considerable froth which clears shortly and a sample upon glass shows better combination
When all Bubbles have cleared off let cool & filter Stearic acid Remains on filter
Water 125 c.c.
So. Phosphate (Tribasic) 2
Shellac 8
#1 mix 2
Bubbles cannot be eliminated

Rec'd P.M.
JUL 16 1912

#7-16-12-#1

Water 500 cc
Tribasic So. Phosphate 25 gr
Filter

#7-17-12-#1

Tannic Acid Solution
Water 100 cc
Tannic acid 1 gr.

Rec'd P.M.
JUL 17 1912

Tan. Soln. 50 c.c.
Shellac, 1-1 gr
Heat - Wort dissolve - add
So. Phosphate (Tribasic) ½ gr
Tons dissolve - add
Tan. Soln - 50 cc
So. Phos - ½ gr
Shellac 3 gr
Solution acid
Do not all dissolve - add
So. Phos - another ½ gr
When all received let cool & filter
Evaporate Water

Rec'd P.M.
JUL 17 1912

#7-17-12-#3 50 c.c.
[illegible] 1 c.c.
Evaporate water
[illegible]

Montan wax 10 gr.
Nitric acid 5 c.c.

#1 { Sample upon glass
#7-17-12-#3
#2 { [illegible]
Dissolve in water and precipitate.
The #1 of Grapewine water.

Rec'd P.M.
JUL 18 1912

Montan wax Dissolve
with Gasolene over
[illegible] table add Xylidine
when liquid add water
like not dissolve

#7-18-12-#1

Xylidine 25 c.c.
Nitric acid 20 c.c.
the action [illegible] produced an
salt-like-mass - get thereafter still
some [illegible] to add
Xylidine and more pure Nitric
added. probably be dangerous - so
add water (cold 300 c.c.
Nitric acid 5 c.c.
Stir and mix thoroughly - thick
froth rises and various size particles
to the bottom - Skim off the froth
and Heat until all clear -
and Heat the other portion separately
when clear - filter through fine linen +
allow to cool. Crystals are formed. clear
+ transparent
The froth also forms crystals somewhat coarser -
Soluble in water

Rec'd P.M.
JUL 18 1912

{#7-19-12-H1 ——— 4 gr
Curtis 50 c.c.

This new acid solution will precipitate the Shellac from the Na-phosphate solution

Notebooks by Edison and Other Experimenters
Group 10: Nickel-Cobalt Ore Assay Notebooks

These twelve undated notebooks were probably used during the period 1905-1907. The books primarily contain the results of assays made by unidentified employees to determine the presence of nickel and cobalt in ore samples. Within each book the entries are consecutively numbered, generally beginning with number one. N-06-00-00.1 begins with number 1254 and is a continuation of N-05-11-09. In addition to the assays, there are a few experimental notes by Edison regarding the processing of these ores, along with a few entries noting the locations of mines. Also included are requests for samples, notes about samples received at the laboratory, and notes about the availability of ores. In several of the books the initial entries in the assay log are by Edison, while subsequent entries are by other experimenters. In such books only the Edison material has been selected, although the unselected pages do contain occasional notations by Edison regarding the assay process or results.

Six of the twelve books have been selected completely or partially. Partially selected books are indicated by a bracketed number noting the approximate percent of pages selected.

N-Number	Label on Front Cover
Selected Books	
04-00-00.1	"Casterline RDC" [less than 5%]
05-00-00.7	"Laboratory Numbers" [less than 5%]
05-07-00	"Morris. J M" [less than 5%]
05-11-09	"Co Samples"
06-00-00.1	"Cobalt Samples" [approximately 30%]
06-00-00.3	"Roasted Speiss in H2S04 C.M.C."
Books Not Selected	
04-00-00.2	"LW"
05-00-00.3	"Ore testing for presence of Cobalt A. E. Howe Burns"
05-00-00.6	"J. E. Reinhardt J. E. R"
05-00-00.8	"H. C. Lewis"
06-00-00.2	"G. A. Longnecken G. A. L"
06-02-00	"R W Walker RWW"

Notebook, N-04-00-00.1

XE-172 N-(04-00-00)

No 1 No Co or Ni

No 2 Very weak in Co no Ni

No 3 No Co or Ni

4 No Co or Ni

5 Very weak Co no Ni

6 No Co or Ni

7 No Co or Ni

8 No Co or Ni

9 No Co or Ni

10 No Co or Ni

11 No Co or Ni

12 No Co or Ni

13 No Co or Ni

14 No Co or Ni

15 No Co or Ni

16 No Co or Ni

17 No Co or Ni

18 Very weak Co no Ni

19 Very weak in Co.

20 Trace Co, no Ni

21 No Co or Ni

22 No Co or Ni

23 No Ni or Co

24 No Co or Ni

No Pt

25 No Co or Ni

26 No Co or Ni –

27 Trace Co no Ni

28 No Co or Ni –

29 No Co or Ni

30 No Co or Ni

31 No Co or Ni

32 No Co or Ni

33 Trace Co no Ni

34 No Co or Ni

35 No Co or Ni

36 No Co or Ni

37 No Co or Ni

39 Trace of Co No Ni - Black residue in acid sol.

38 No Co or Ni

39 No Co or Ni

40 No Co or Ni -

41 No Co or Ni -

42 No Co or Ni

43 No Co or Ni -

44 No Co or Ni

45 No Co or Ni -

46 No Co or Ni - Yellow residue in acid sol.
No Pt.

47 No Co or Ni

48 No Co or Ni -

49 No Co or Ni

50 No Ni or Co

51 No Co or Ni -

52 No Co or Ni

53 No Co or Ni - Gray residue in acid sol

54 Trace of Co No Ni - Gray residue in acid sol
No Pt

55 No Co or Ni -

56 Trace Co no Ni

57 No Co or Ni - Brown residue in acid sol
No Pt

58 No Co or Ni

59 Trace Co no Ni

60 No Co or Ni -

61 No Co or Ni

62 Trace of Co No Ni - Gray residue in acid sol -
No Pt

63 Trace of Co No Ni - Brown residue in acid sol
No Pt

64 No Co or Ni - Brown residue in acid sol.
No Pt.

65 No Co or Ni -

66 No Co or Ni

67 No Co or Ni

68 No Co or Ni - Brown residue in acid sol
No Pt

69 No Co or Ni -

70 No Co or Ni - Gray residue in acid sol.
No Pt.

71 No Co or Ni

72 Co about the same as Loading - Ni very weak - Green residue in acid sol.
No Pt

73 No Co or Ni

74 No Co or Ni -

75 No Co or Ni - Brown residue in acid sol.
No Pt

76 No Co or Ni

77 No Co or Ni

78 Trace Cobalt no Ni

79 No Co or Ni -

80 No Co or Ni Gray residue in acid sol.

81 No Co or Ni - Brown residue in acid sol.

82 No Co or Ni -

No Pt.

83 No Co or Ni

84 No Co or Ni

85 No Co or Ni -

86 No Co or Ni

87 No Co or Ni

88 Trace Co no Ni

89 No Co or Ni No Pt

90 No Co or Ni

91 Trace of Co. No Ni - Red + Gray residue in acid sol. No Pt.

92 No Co or Ni

93 No Co or Ni -

94 No Co or Ni -

95 Trace Co no Ni

96

97 No Co or Ni -

98 Trace of Co No Ni - Brown residue in acid sol No Pt

99 Trace of Co no Ni No Pt

100 Co 1/2 as strong as Ludwig, Red in acid sol no Ni No Pt -

101 No Co or Ni - Brown residue in acid sol No Pt.

102 No Co or Ni - Gray residue in acid sol

Notebook, N-05-00-00.7

N-(90-00-00,3)

9909
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001
000

V 1 Co No Ni

V 2 Co No Ni

V 3 No Ni or Co

V 4 Very weak Co No Ni

V 5 Very weak Co "

V 6 No Co or Ni

V 7 No Co or Ni

V 8 No Co or Ni

V 9 No Co or Ni

V 10 No Co or Ni

11 No Co or Ni

12 No Co or Ni

13 No Co or Ni

14 No Co or Ni

15 No Co or Ni

16 No Co or Ni

17 No Co or Ni No Pt

18 No Co or Ni -

19 No Co or Ni. Brown residue in acid sol. No Pt.

20 No Coor Ni Brown residue in acid sol No Pt.

21 Traces of Co No Ni - Brown residue in acid sol. No Pt.

22 No Coor Ni - Brown residue in acid sol. No Pt

23 No Co or Ni - Brown residue in acid sol. No Pt

24 About twice as strong as Ludwig - also Copper - Brown residue in acid sol No Pt

25 Traces of Co No Ni - Brown residue in acid sol. No Pt

26 No Co or Ni

27 No Co or Ni

28 No Co or Ni

29 No Co or Ni

30 No Co or Ni No Pt.

31 Very weak Co no Ni

32 No Co or Ni

33 Very weak Co No Ni

34 Very weak Co No Ni

35 No Co or Ni

36 No Co or Ni

37 No Co or Ni

38 No Co or Ni

39 No Co or Ni

40 No Co or Ni No Pt.

41 No Co or Ni -

42 No Co or Ni

43 No Co or Ni - Red residue in acid sol

44 Trace Co No Ni

45 No Co or Ni - Brown residue in acid sol. No Pt

46 Trace Co No Ni No Pt

47 No Co or Ni Brown residue in acid sol No Pt

48 Trace of Co - Yellow residue in acid sol. No Pt

49 No Co or Ni

50 No Co or Ni

51 Trace of Co No Ni - Brown residue in acid sol. No Pt

52 No Co or Ni

53 No Co or Ni

54 No Co or Ni

55 No Co or Ni

56 Trace of Co - No Ni - Black residue in acid sol.

57 Weak in Co - pyrites -

58 No Co or Ni - Brown residue in acid sol.

59 No Co or Ni

60 No Co or Ni

61 No Co or Ni

62 Trace Co No Ni

63 No Co or Ni

64 No Co or Ni

65 No Co or Ni

66 No Co or Ni

67 No Co or Ni

68 Very weak in Co. no Ni - Black residue in acid sol. No Pt

69 No Co or Ni. Black residue in acid sol.

70 No Co or Ni

71 No Co or Ni

72 Weak in Co No Ni

73 No Co or Ni

74 Trace of Co No Ni - Brown residue in acid solution No Pt

75 No Co or Ni - Brown residue in acid solution No Pt.

76 No Co or Ni - Grey residue in acid sol., Pyrites

77 Trace of Co No Ni - Brown residue in acid sol. No Pt

78 No Co or Ni - Brown residue in acid sol. No Pt

Notebook, N-05-07-00

	1 Trace Co No Ni -
.2 Co	2 3 times stronger than Ludwig No Ni
.7 Co	3 No Ni or Co -
	4 Ten Times strength of Ludwig - probably stronger
	5 1/3rd stronger than Ludwig "
.2 Co	6 Co - 3 times stronger than Ludwig
.2 Co	7 Thrice times " "
.19 Co	8 2 2/3rd times " "
	9 No Co or Ni
.4 Co	10 6 2/3rd stronger than Ludwig
.15 Co	11 2 2/3 times stronger than Ludwig
	12 Pyrites quite quite strong in Ammon Sol -
	13 Weak in Co No Ni

14 Two times stronger than Ludwig

15 3 2/3rds stronger "

16 Weak in Co. No Ni

17 No Co or Ni -

18 1 times stronger than Ludwig

19 Little Co no Ni

20 No Co or Ni

21 5 1/3 stronger than Ludwig has Copper No Ni No Pt.

22 No Co or Ni No Pt

23 Copper No Co or Ni No Pt

24 No Co or Ni. No Pt

25 No Co or Ni - No Pt

26 1/3 times stronger than Ludwig No Pt

27 1/4 as strong as Ludwig - No Pt.

28 No Co or Ni No Pt.

29 No Co or Ni

30 No Co or Ni - - Copper - white residue in acid sol. No Pt.

31 No Co or Ni No Pt.

32 No Co or Ni No Pt.

33 Trace of Co No Ni - Gray residue in Acid solution No Pt.

34 No Co or Ni - Yellow residue in Acid solution No Pt.

35 Trace of Co No Ni No Pt.

36 3 1/2 times stronger than Ludwig - Very light pink in ammonia sol. Black residue in acid sol. No Pt.

37 Copper No Co or Ni - yellow residue in acid solution No Pt.

38 Very Weak Co - some copper - No Ni - Black residue in acid solution No Pt

39 Co 2/3 stronger than Ludwig - No Ni - Black residue in acid solution No Pt

Notebook, N-05-11-09

4.5
24.5
29.0

6.50
2.00
50

4.5

200 | 900
6000
1000

32
17
200 | 4900 | 24.5
4000
900
800
500

10

30 | 240 | 8

6

60

60

3.68

Pt. 622 RDC. X E-172
N-(05-11-09)

Laboratory Nos of Ores
Reed for Cobalt.

No 1 Ore Lukens & Yerkes
418 Commonwealth Bldg Phila
No 1 is best assorted Manganese
from No 1 ore pit.

No 2 Same as No 1 ~~but~~ Called No 2
in Miss Letter. Large body - can furnish
large quantity -

Sample 6 oz each

No 3 - From O Horrell, Agt & Operator
Norfolk & Western RR -
Front Royal Virginia -
Its his sample No 2 Marked Thompson -
has white pyritiferous & some dark pyrites.
its a Diorite looking gangue -

No

Lab No 4 - is O Horrells No 6 marked
Thompson its a quartz Mica slate
shows pyrite.

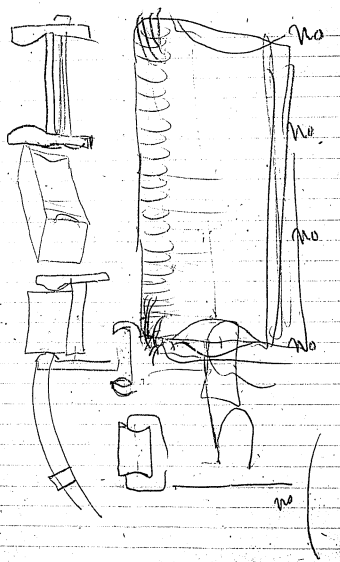
Trace Co

Lab No 5 is O Horrells No 4 marked
Henry Coarse greenish rock with bright &
dark pyrite & garnets.

Trace Co

Lab No 6 - is O Horrells No 8 marked
Thompson. has pyrites.

No



Lab No 7 — is O Horrells No 7 marked Robinson — stained with Copper —

Lab No 8 is O Horrells No 5 marked Thomp Slate with yellow pyrites —

Lab No 9 — is O Horrells No 3 marked Roy — stained strong with Copper Rock look like a Dolerite.

Lab No 10 is O Horrells No 1 marked Thompson contains Either Graphite or Molybdenite
His letter in No 10 —

Samples from J B Beatty = Allen Minn
Sample box sent

Lab No 11 — is from J Beatty, its granite.

Lab No 12 " spotted hard rock.

Lab No 13 " greenstone

None	Lab No 14 Is from Beatty = Allen Mine
	Lab No 15 " " " thin banded rock
	Lab No 16 " " " Coarse Crystalline [illegible]
	Lab No 17 " Seam 6 inches wide ore
	Lab No 18 " Just rock –
	Letter on No 18 –
	From Mine at Edison
No	Lab No 19 – Sample from Mine this side of Iron Hill,
No	Lab No 20 from Ogden Cut,
Trace Co	Lab No 21 from Iron hill – Samples
No	Lab No 22 Samples from Mine next to Ogden Cut,
	Lab No 23 Samples from Horseshoe Cut
.060 Co	Lab No 24 from Copper mine near Iron Hill

Xica Co

Lab No 25 – from Davenport Cut,

out samples box

From E H Bruya Jel Co for
Beldens Vermont.

Lab No 26 – Beldens No 3 –
dense slate –

Lab No 27 Beldens No 8 + No 1
Quartz –

Lab No 28 Beldens No 6 ~~Co~~

Lab No 29 Beldens No 4 + 5

Lab No 30 – Beldens No 7

Trace Co

32 - Radium ~~[illegible]~~ fair -

Trace

Trace

36 - Radium [illegible] fair amount -

Samples from Ben Doyle
Renora Ontario,

Laboratory No 31 - is Doyles No 1 Hornblende Mg hornd

Lab No 32 is Doyles No 2 Cobaltite Pyrrhotite

Lab No 33 is Doyles Nickel Ore - Solid pyrrhotite
Letter in Sample box No 1

Dup Sample Box Memo.

Samples from A Y Smith, W H Jel
P O Box 97 Tullahoma Tennessee -

Lab 34 Smith Sample No 1 - Common Solid
dark pyritiferous or Marcasite - There is something in it

Lab No 35 Smith Sample No 2 -

Lab 36 Smith No 3 White pyritiferous

Lab 37 Smith No 3 ½ Curious Red spot rock
Some fine Crystal in it -

Lab 38 Smith No 8 -

39-Radium - free

Lab 39- Smith's No 4 Solid pyrites -

Lab 40 Smith No 5 Solid pyrites.

LAB 41 Smith's No 6

Lab 42 Smith's No 7 Galena -
Letter in 42

Lab No 43 Hensinger Albertus Pa
Ludwigs mine - yellow Wad -

Lab No 44 Hensinger Albertus Pa
Wad from Smecks Huff's Church

Lab No 45 Hensinger Albertus Pa
Rock from Smecks Mine Huff's Church

Lab No 46 Hensinger Albertus Pa
Wad above the Manganese
don't say where at.

Lab No 47 Hensinger Albertus Pa
Rock from Ludwigs Mine

Lab 48 from Hemenway Albanius
Rock from Ludwigs Mine

Lab 49 from C A Cooley
Cellar, Pitkin Co Colorado.
Quartz with pyrites & rose quartz.

Sent Sample Box
Lab 50 from Geo Wright Jr Wright NY
on N Y & Hudson

Unnamed piece, full of Garnets.

Lab 51 from Geo Wright Jr
Quartz, contains either Graphite or
Molybdenite, also Mica, possibly pyrite,
It's marked "Rock Cut" —

Lab 52 from Geo Wright Jr Marked
Pond blast, Sort of a Quartzite,
with some White pyrite.

LAB 53 from Geo Wright jr - marked "L.S."
Coarse Quartz feldspar rock.

LAB54 from Geo Wright jr Marked "Cove Quartz"

Lab55 from Geo Wright jr Mol Voc or Vol.
Quartz + light rotten rock.

Lab56 fm Geo Wright jr Marked "2 P."
Quartz Sandstone with Either graphite or Molybdenite.

Lab57 from Geo Wright marked Farm he asks what it is. looks like it is iron pyrites.

Lab58 from W.P. Chandler, Whiteside Tenn
Claylike Chunk

Lab 59 EH ~~Bry~~ Bruyn - Belden Vt
Mark 24 Limestone.
Bruyn Nos 20 17-19 15 14-16-18 - all limestone
~~do not test~~

Lab 60 EH Bruyn Beldens Vt marked 22
dark limestone.

Lab 61 EHB — marked 23 - Calcite + dark limest.
Lab 62 " " 25 - Limestone
~~Lab 63~~ " Marble - not tested.
" " No 11 Marble not ~~tested~~.
" 10 + 12 + 9 "
Lab 63 " dark limestone marked 13.

Lab 64 from ~~Mig~~ Miguel de Porrata Doria
Propietario de Minas Ponce Porto Rico
Said to contain Monazite.

Lab 65 from D B Riser Rendalia Ala
~~sent sample box~~
Sends one peice very peculiar very dark
green rock — Wants to prospect,
wants him to send more samples.

Lab 66 — from W C Seeley Schoodic Maine.

Lab 67 " "

Lab 68 from P Loomis West Shokan NY
Marked No 1 in paper bag like Wad —

Lab 69 — Loomis — Marked 7 n 1 — Wad

Lab 70 " " 3 — black stone.

Lab 71 " " 4 - 6 - 5 - 2 —

Lab 72 - from D D Smith Garland Georgia
Marked Specimen of pyrites from the
Copper Mine N E his place — its rich —

Lab 73 - Is flint - looks like Limonite
is from D D Smith.

Sent sample box

Lab 74. From Ernesto Armendariz
Estación Yerbanis, Dgo Mexico
Heavy iron like — its not magnetic —
is poly Manganeses or Pulolusite
Have Gasoline see it when he
Comes — ~~[illegible]~~

Sent sample box

Lab 75 from S L Van Amezinger
Hot Springs North Carolina —
his sample No 5
Looks like Limonite.

Lab 76 Van Amezinger No 7
Arsenic —

Lab 77 Van Amez No 6 —
Pegmatite —

Lab 78 Van Amez No 8
Looks like jet from Limonite,

Lab 79 Van Amez No 4
Looks like Nickel ore —
Something in it sure —

Lab 80 = Van Emeg No 3
send 60x Samples

Lab 81 from H A Anderson
Opr Western Maryland RR Co
Chambersburg Pa —
Magnetite, exactly like Prof Kerr's
send 60 oz Samples —

Lab No 82 from W T Coggins
send Sample 60x
Clerk in Chemical Co
Emerson Georgia
Pyrites.
send him 60 oz Sample.

Lab 83 — from Wm Carl Ehlen
23 Dupont St
Buffalo NY
Query with Calcopyrites

Lab 84 from James Weston
Charlestown Mass,
See letter — pyrrhotite —

over 1% Cobalt.
& strong nickel

Lab 85 - from G H Cook
Charlotte Vermont
He sends 3 Samples 1 2 & 3
Unlikely Rock - Gneiss quartz &
Garnet lacc in one Number —

Lab 86 - from S L Van Ameringer
Hot Springs North Carolina -
Seems to be Calcopy pyrrhotite
& Magnetite - solid mass,
Pts marked S L Van Am No 7

Lab 87 - from C P Johnson
Mesabe St Louis Co
Minn -
Lump of black fine grain heavy

Lab 88 from S L Van Amringer
Hot Springs N Carolina
No 1

Lab 89 from E M Halley
P Mine Araby Md
Agt Frederick formation Md,
No 1 its either Quartz or
Limestone, with specs like it of
Either graphite - Molybdenite, or
Tellurium —

Lab 90 — E M Halleys
No 2 -
Red deposit, hard, forms in it,

Lab 91 from D B Riser
Rendalia Ala
his No 2

Lab 92
from D B Riser.
Rendalia Ala
his No 3

93 Lab from J A Jenner RR agt
Sandy N Carolina —
Ochrs -- 2 kinds put together

Lab 94 — Iron ors from J A Jenner
Sandy NC —

Lab 95 from R M Holden
Cuttingsville Vermont
5 lbs pyrrhotite put in bag
marked pyrrhotite

Lab 96 — from R M Holden
Marked Nickel ors —
Put in bag — ½ Quartz
grains with Calcopyrite etc
Note has about 1% Cobalt,
also some Nickel —

Trace

Lab 97 = from D O Stinson
Falkville Ala
Hes No 4

Lab 98 D O Stinson
Hes No 1 -

Lab 99. D O Stinson
Hes No 5
Limestone - fossils -

Lab 100 - D O Stinson -
Hes No 7
Red Clay -

Lab 101 - D O Stinson
Hes No 6
This is a solid dense pyrite
Looks queer yellow stamp product
on it.

Lab 102 D O Stinson
Hes No 3
Limestone.

Lab 103 D O Hinson
Hrs No 2
Solid pyrites, Quincy

Lab 104 – Walter gave me this sand
he got it in Smithers California

Lab No 105 Metal Cobalt Ore from
C E Mitchell Co. Opokane, Wash.
See Letter

Lab 106 Bruys Belden Vt
hrs No 37

Lab 107 Bruys Beedens Vt.
hrs No 38
Lab 108 Bruys Beedens
Hrs No 36.

Lab 109 – from Charles Stiles
Tin Cup Hunnison Co Colorado
Molybdenum Ore –

Lab 110 – from W H Gay
303 Boren Ave
Seattle Wash
Black Powder Heavy

Lab 111 – from H D Deibler
Belvidere NJ
Copper Ore – funny – Adams Co Pa –
Some Nickel & Iron –
Letter in file –

Lab 112 from Thos Depp
Chrudenasburg Va –
Lot of samples ~~[illegible]~~ numbered
his in good Collector order him
Box Cobalt Samples –
No 5 – 3 – 1 – 9 – 10 – 17 – 15 –
22 – all Bunched together

Lab 113 – from Thos Depp – ds for Nos 9 & 10
His No 13 is certainly Cinnabar

Lab 114 – Thos Depp
His 19 & 12 Bunched
See Letter

Henrys may be mixed with Depps —

Lab 115 from David P Henry
Danville Pa —
Hs No 6 — See Letter —

Lab 116 Henrys No 1
Lab 117 " No number —
Lab 118 " No 11
" 119 " No 10 —
" 120 " No number
" 121 " No ".
" 122 " No 3 Not seen by Mixed
123 " No 4
124 Nos 19 + 20
125 No 21
126 No 16
127 No 13 —
128 15 + 17
131 — No 12
132 No 9

Lab 129 Wad from J W Yerry
Dillsburg Pa
Lab 130 dittto Rock —

Lab 133 from S C Whitmore
Rock from sea shore
powder –
3½ Dover St Cambridge Mass

Lab 134 – Cryostile & pyrrhotite stained
Hes No 1 –

Lab 135 Whitmore No 3

Lab 136 " No 4

Lab 137 = from F K Strasser M D –
Surgeon San Jacinto California
Hes No 1 dense Calcopyrite,
Co – 3/10 of 1% – Blackwell –
Letter telling this sample

138 = Strasser – hes No 2
Quartz with graphite or Molybdenite
letter telling hum to Mas

139 – Strasser hes No 3
Rock stained with Copper

Rec'd Strasser box samples

Lab 140 – from J H Volk
Union House
Reading Pa
A blue curious rock which
he thinks Cutting's Radium –
Letter rec'd

Lab 141 from C P Johnson
Opr Mesaba
Mostly drill Cores Minn –
Hole No 7

Lab 142 – Johnson No 6

Lab 143 Johnson No 2

Lab 144 " No 3

Lab 145 " No 4

Lab 146 " Nos 9 + 5

Lab 147 " No 8

Lab 148 " No number
Letter

Lab 149 from D. L. Van Amerzinger
Hot Springs N Carolina
Hro No 14

Lab 150 Amerzinger No 11 —

Lab 151 Amerzinger No 13 —

Lab 152 " No 10 zone Mn + 10% Co

Lab 153 " No 12

Lab 154 " Letter No 9

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155 from R Cline
Elizabethtown
New Mexico —
Hro No 5

156 Cline's No 18

157 Cline No 30 -

158 Cline 22

159 Cline No 2

160 – Chnés 4
161 Chnés No 19
162 Chnes No 3
163 Chnes No 4
164 Chnés 16
165 – Chnés 47
166 Chnes No 11
167 Chnes No 39 –
168 " 20
169 " 13
170 " 42
171 " 27
172 " 12
173 " 48

	174	Chrome	No 38
	175	"	No 8
	176	"	31
	177	"	26
	178	"	14
	179	"	25
	180	"	No 10 or 40
	181	"	33
	182	"	32
Cobalt Nickel	183	"	45
	184	"	37
	185	"	36
	186	"	43
	187	"	23

188 Chines no 17
189 " 9
190 " 10
191 " 7
192 " no 1
193 " 34
194 " 26
195 " 46
196 " 24
197 " 15
198 " 35
199 " 6
200 " 41
201 44

202 Chuno No 29
Lette

J Moores No 4 is from the Remington
Mine –
J Moores No 36 is Light wad,

203 – from E C Moore
Agent Oregon RR & Nav Co
La Grande
Ino No 6 Oregon
free white pyritiferous.

204 Moores No 12

205 " No 25 has yellow mineralth

206 " No 8

207 " No 10 white pyritiferous

208 " No 1 Some white pyrite

209 " No 21

210	Moore	MO	4
211	"	MO	7 White & yel pyrites
212	"	MO	14
213	"	MO	2 Considerable white pyrites
214	"	MO	5 white with brown spots
215	"	MO	19 green rock - white pyrites
216	"		15
217	"		9
218	"		16 dark pyrites looks good
219	"		24 White pyrites
220	"		3 - dark rock pyrites looks ok
221	"		13
222	"		22 yellow-green - Ni or Uranium
223	"		20 Sea green rock dark py
224	"		18
225	"		11 Lots white Pyrites
226	"		17 " dark & white py - Quartz
227	"		23 Curious Quartz stained yellow

Possibly Uranium — S.D. what is it,
Letter.

228- from L H Ball.
Raton
New Mexico -
his No 5 White yel pyrite

229 Ball - his No 4 - Copper ore

230 " his No 3 "
231 2 Nearly sol. white py
232 6 - Some white py
233 " 1 Nearly solid white Py
234 9
235 10 Some pyrite
236 11 Darkish py
237 12
238 8
239 7 Ni or Cu ore
Letter

240- from J E Brown, Lost Cabin
Oregon Short Line
Cokesville Wyoming
his No 2 looks like Cu Ni & Co -

241 No 1 Curious dark rock -
242 3 Quartz

243 - from H George Letter
Barrys Bay Renfrew Co
Hs NO 1 — Ontario Canada

244 Hs NO 3 -
245 " 2 Graphic or Molyd
246 4 Solid pyrite.

---

247 from Jno W Strauss
Rye Patch Nevada
Hs Concentrates Good -

248 Tails — Letter

---

249 from C A Cooley
Sellar Colorado,
Hs NO 2

250 Cooleys NO 6
looks like Tellurides —
dark pyrite —

251 Cooleys
Hs No 7 dark pyrite, Cu or Ni
stain -

252 Cooleys No 4
White Rock dark pyrite -

253 - Cooleys
No 10 - pyrrhotite with py

254 Cooleys No 8
Pyrrhotite,

255 " No 5 White pyrite

256 " No 10

257 " No 9 -

---

258 Belding Vermont Mar
hs No 48

259 - " 46 -

260 47

261 from J A Farmer
Hardy N.C.

262 from Geo Wright jr
Wright N.Y. —
White pyrites Ni or Cu stain

263 from Dickens Ut Man
Has 44 Red rock

264 " ditto But no got lost.
Came with 44 —

Letter

265 From A J Folger
Divide Colorado,
Hio No 1 Curious rock

266 — Folgers Crushed Sample

267 From John Woolcock
Cold Spring Nev —
Slate — Hio No 2

268 Woolcocks No 1 quartz

269 — " " No 1 — Slate

270 " " No 1 · Dic

271 " No 3
Letter —

276 is very rich Co Wad see to it
possibly over 50% —

272 from Henry C Lewis
Bon Aqua
No 1 Tenn —

273 Hs No 5 — Solid white pyrite

274 hs No 2

275 hs No 4

276 — hs No 3 — Hancock Co

277 from R Goubelman
Cafficorn Depot
Sullivan Co NY
Hs No 1

278 Hs No 2
Letter.

279 from Thos C O'Donnell
Winnemuca Nevada
Hs No 9 — and Sample Co

280 No 11 — Dent

* 283 – Its arsenic & has some Antimony — The pyrites which I panned is about 5% of the whole & from tests should say these are Exceedingly rich Nickel & Cobalt arsenides – The ore could be Easily Concentrated —

Morris No 62 got lots Nickel to a section – Soldiers delight Mine – owned by Tysons Bullfrog, Next to Serpentine Canyon

X got letter from him about No 8 –

Under ( ) in letter file –

O Donnells –

281	No 7	
282	No 10	
283 *	No 8	* Heavy – Very Curious what is it
284	" 5	
285	" 6	Curious – dark py – Cu –
286	" 3	
287	" 2	
288	" 4	
289	No 1	What is it – Sure for Carlsbad

290 from A M Wallick
Chief Dispatcher
His No 3 White Pass & Yukon RR
Skagway Alaska

291 His No 1 Lead ore

292 – Number Came off –
293 "
294 "
295 – "
296

Sent Sample to Get

Coalerlines 332 a serpentine
has over 1/4% 6 oth Ni + Co —

297 from C W Durrett
Red Hill Albermarle Co
Virginia
Ans No 1
298 Ans No 4

299 Ans No 2

300 No 6
301 No 3
302 No 5

Send sample box to Lewis J Henise
346 W Market, York Pa

303 from Otis B Goodwin
Colton California
1 sample —

Rendbox samples

304 from W B Coombs
Needles California.
No 1

305 No 2
306 - No 3

307 from O Harrell
Front Royal Virginia.
Looks like Smaltite, Think it Hematite,

308 from E E Boehm - UPRR Station
Laramie Wyoming
No No 1

309 " No 2
310 " No 3
311 No 5
312 No 4

313 from Edmunt Schreiner
10 Green st
Charleston S. Carolina
[redacted] No No

314 "
315 "
316 "
[redacted] "

317 = from J E Ray Rye = Patch
Nevada

Says to Tungsten Thermometer
of time unknown show to Carolina
Letter -

318 from M W Bishop = Blanchard Maine
No 3 only quality
No test -
319 No 2
320 No 1
321 4

322 from E M Halley
Araby PO
Patchuck Co Md
No 2 Only quality No test

323 from D B Riser
Rendalia Alabama
No 7
324 No 4
325 No no -

326 – from E Armendariz
Yerbanito. Dgo Mexico
2nd Lot

327 – No 2
No 4

328 from W O Dobsen
Teigh Opr Great Northern RR
Snohomish
No 6 – Wash.
Copper pyrites

329 – No 5 – "
330 – No 3 "
331 – No 1 "
332 – No 2 "
333 – No 7 Solid white pyrites
334 – No 4 " "

329. Has 1.12% Bismuth, 49 oz/ton

335 from A W Wallick
Opr White Pass RR
Skagway Alaska

336 from O Horrell,
Front Royal Va

337 from ~~J E Dean~~ A. E. Garvey
Skagway, Alaska.
His No. 19

338	" 9
339	1
340	4
341	8
342	18
343	20
344	14
345	11
346	10
347	5
348	12
349	2
350	13
351	6
352	7
353	17
354	16
355	3

356 - from J E Ray
Rye Patch Nevada?
Says it's Impurity Copper
Looks like Micaceous Iron
Letter -

357 from Nott E Guild
Red Rock
Arizona -
Copper ores No 3

358 No 1
359 No 2
Letter

360 from E Amendariz
Yerbanis Dgo Mexico
Marked No 1 } Copper & Zinc
also " No 1 } patent Tope
also No 1

361 from Don H Rodgie
Lordsburg New Mexico
Decomposed Copper ~~[illegible]~~ Mission

362 from W 7 McQuitz
Buena Vista
Colorado –

Rock sand with the gold + platinum –

363 – from S L Van Amringe
Hot Springs North Carolina
Hes 17 = [illegible]

364 Hes 15

365 Hes 16

366 Dup 15
367 Dup 15
368 No number – Curious pyrite
Letter

369 from S E Tolliver Dent Box Sweetwater Co
Agent + Opr
Medicine Bow
Wyoming
Letter

370 from A W Dugan
Wendling
374 2nd shipment | Oregon —

371 from R J Harris Opr
Fayetteville N Carolina

his 10 - 3 - 4 12 —

372 his 8 - 11 - 4 —

373 1 - 6 + 9 both fossilized wood

375 from J C Riordan
Cuba PO
Lassen Co
Cal
X04 Cal
376 X03
377 X02
378 X01
Letter - Sent Sample Cop

379 — from E. Armendariz
Yerbanis Dgo Mexico
Curious rock —
Brown with Cop stain

380 from Frank Ellsworth Black
Mohawk Station
Chrystoval PO
Arizona Terr —

	N016
381	13
382 —	14 — ny
	7 only qualitatively
383 —	15 Trace Co
384	3
385 —	7
386	2
387	9
388	10
389	5 Trace Co
390	1 pbly Co — Trace Co
391	6 Trace
392	13 Trace
393	8
394	4

Letter — Sent Sample box

395 – from Edison Hogs
370 So Marengo Ave
No 2 – Pasadena California

11-6-4-9-10-7 – only feldspar & quartz

396 – No 5 – & No 3 –
397 8
398 No 1
399 ~~No~~ No 12 not calcium

Dead Sample Box
Letter – wants photo –

400 – Sample sent by Morris of
Cobalt pyrites from Mine La Motte
Missouri

401 – from Armendariz
Yerbani Dgo Mexico

402 – from Ethall jr Afton Virginia
pyrites –

Radium fair –

403 – from Mrs McClure – Glendale –
Specimens no catalogs – sandstone
Johnny Randolph – perhaps

Radium – No Radium
403 –

Lost samples -

404 from B V Hutchinson
Lincoln West Virginia
Several samples but numbers
indistinct divided it in 2 lots
Slatey

405 drills - fine pyrites in dense rock
Later

406 - from Mercy or Morey
No 3 - Not letters only line on samples
Sample looks good for Co -
later
407 "B" No 2 from S W Biles
408 No 2 Rummerfield Penn -
409 No 1
410 No 4

411 from C A Bowen Cofr
Pelham Georgia
Cont. pyrite - Letter

412 - from W O Dolsen
Snohomish.
Copper ore Wash.
Hus No 8 Sellers

413 from W A Harman
Cowley Yukon Ter
Hus No 1 - 42 - very heavy something
" 2
414 " 3
415 " 5 good Copper ore
416 4 wrap
417 He says 1 2 4 3 for same ledge
4 tested found good Colds

418 from G. I. Cochrane MD
East Dorset
Vermont.
No 1
419 - 243

420 from C P Johnson
Mesaba Minn —
No 10 & 11

421 from G L Henritzy
729 Cooper Bldg
only little Nickel Denver Colorado
Sample pyrrhotite says rich in
Cobalt, big vein 30 miles from
Denver see letter —

422 from G F Lane
Standard Consolidated Mines Co
Sumpter Oregon
1/2 lb Sample - White pyritics, new kind to me.
or Calcopyrite, says Ni Co & Cu
Looks it if white (Tin white) pyrite has them.

423 fm S S Smith
Garland Georgia

424 — from A K McLachlan
Deer Harbor ? —
See letter —
Sample marked A. Kootney BC
pyrite —

425 from M G Santoyo
Estacion de Rincon
E. de Gto
Mexico —

	X01
426	X05
427	4
428	3
429	7
430	6
431	2

432 from J M Atkinson
Columbiana Alabama
pyrites

433 from J a Jackson Sel-Operator Letter
Helena Montana
No 1 only quantity No tests
6 "
4 "
3 " Send Sample -
2 "
433 — 3 — Looks Like Cu or Ni -

434 from M Frantz Rye Patch Nev

435 fm - H G Tingman Letter
Indio
807 Riverside Co California
436
437 " 6 Looks Like Nickel
438 1
439 4
440 5
441 - 3

442 no 9
443 2 ni
444 8

445 from Edwin H Schirmer
10 green st
Charleston SC
Many samples no numbers
bunched them in B lots
one had pink bloom —
446
447 Letter —

Morrco 195 — is on a farm
Heavy iron, non mag. looks a hematite
but not of monite, looks like Marquette
has 1/2 to 3/4 Co ~~[illegible]~~ any
2 percent or more Nickel —
look it up —
Miss Mary E Cox land 2 1/2
m S of Union Bridge
3 dif rocks — which is it? —

448 – from C W Grim
Manager W U Telegraph
Orange Va
No 2 Solid white & dark pyrites
449 No 1
Letter. –

450 from E C Belt
Lordsburg N Mexico
No 1 Rich Calcopyrite Cu ores
451 No 2 pyrites

from E C Moore
452 } Hco 26 & 27 – [redacted] La Grande Oregon
453 } Come with it –
[redacted]
[redacted] Ke Grande
Another beg 60 x marked hm 28 Oregon
454 [redacted] Lake like Co Gloom mt,

455 from G Stice
Clear Lake Utah
No 3 from Hampton
456 No 1 Curios – Emery etc S S
457 2 from Pooley Nev
Letter –

458 from W J Henderson
Box 282 Tifton Ga.

	No 7	
459	5	
460	3	white pyrites
461	4	Clay
462	1	Oil shale from Alabama
463	2	pyrites, some Cobalt
464	6	from Cobham Co. Fla. Clay

465 from Charles Curnow
Care Coldstream Hotel
Vernon BC
Canada
pyrrhotite & limonite, says there
is platinum in it.
Collector

466 from Stapleton Va
CORR — No name — block
cliff with pyrites,
plumbago?

467 from W J Henderson
Tifton Georgia -

Sample from hard shipping
iron ore Elbvale Mine.
No 140 sent by Morris -
Sample sent to McCrosth
gwb

Metallic Manganese 53.419
" Iron 10.520
" Cobalt 1.020 -

271 Morris, from farm of Josephus
Underhiff Illinois Chinley
with black spots, Mn Spar
diamond. Very rich in Cobalt
The black stuff must have
6 to 8% - Look this up -

from D B Rider
Rendalia Ala

~~467~~ –
468 –

469 – Galena pyrite, Sous Cal.

470 – from O'Horrell with 2% Wad ~~[illegible]~~ Front Royal Va. Pitch, [illegible]

471 from M G Santoyo
Estacion de Rincon
No 9 E de Gto Mexico.

472 No 10 – Pyrite dark yellow.

473 No 8. Galena

474 from Thos Depp
Christiansburg Va.
Marked A.

475 D

476 F

477 E

478 from Jno W Strauen
Richmond ore Rye Patch
Nevada —

479 — from J H Knight
Rincon
Mrs RO 10 — pink Calcite New Mexico
480 " 12 " 109.1% put together
481 4
482 3
483 5 very pink calcite & Chrysocolla
484 11
485 9 yellow — Very peculiar. Colo?
486 7
487 6
488 2
489 1
490 8

Look out for Morrow 296 to 305
Etc Bassanelly from Trust Co
Lands Thru Mulder Copper strong
& Very good Cobalt & Nickel
crushing —

491 from J Mark Kacey
Ivanpah California
Letter —

No 1 Heavy — dark pyroxene.
492 — 2 Amphy — decomposed white spots.
heavy Letter —

493 F K Strasser San Jacinto Cal —
No 2
494 — 3 Magnetite —
495 1 Letter

496 from R R McLachlan — Westville Co
Deer Harbor Wash. No
No 100 —
497 — sample B Puget Sound —
498
499 — green rock Trap like Letter

500 from D B Rhoads
Randolph Ala
White rock W
Pyrites M —

Very Strong Ni & fairly strong Cobalt -
(opals and Ni like stuff)
Uncommon Cobalt stain -

Strong Ni & good Cobalt -
Wrote Ian - 2% Ni 1/4% Co -

501 - from M P Kay
Cheatum Washington S.E.
Nface RR agt + Opr - Letter
1/2013 - Looks Like Nickel ore
Nice Cobaltous sample

502	12	Nickel ore "
503	5	Some Platinum - looks like some nickel ore -
504	6 =	Looks Like Lunstrom some dark pyrite -
505	2 -	Some Platinum + Ni - looks like Hematite,
506 -	1	Looks Like Lunstrom some pyrite - st.
507	3	Some Ni - Pb - looks like Cerussite may be Nice Zinc or Pb or Zinc or something not of way
508	8	Chalcopy + pyrrhotite - Solid -
509	7	Solid black Hematite or cobalts heavy
510	9	Chalcopyrite -
511	11	Solid " + pyrrhotite! Think Co + Ni in it -
512	4 -	Some Co + Ni
513	10	Solid Chalcopyrite -

Very interesting samples Letter

514 from H W Kappes
Shippenburg Pa ~~[illegible]~~
~~Gettysburg [illegible]~~ S
Ocher - No 2 —

515 — Hes No 1 Curious Trap
with Curious pyrites or
something looks like pyrites
Lilly

307 Morris
Plant from Josephus Grandcroff
Having Curious Microscopic
Something -

516 — from Jno L Henritzy
729 Cooper Bldg
Denver Col —
No 2
Ferruginous dolomite

517. DB Russel
Rendalia Pa
Rhustose slaty rock quessing

516 from J C Harris
Manatee Florida
Several pieces def Color hard clay

519 Ochre
520 "

Mr Santoyo
Estacion Ds Rincon
521 — E de Gto Mexico

522 from H S Fuke
North Jay Maine -
Ng - Antimony Lyl 48

317 Morris pocket for Oreudorff
farm black wood about 1/10 1½ —

523 — from H R Green
Alborn Minn
Yellow -

Send him Wed —

524 from J T Simpson
Tullahoma Tenn

	Nos	
525	6	
526	7	
527	4	Silver white pyrite Comm
528	8	
529	2	Boyhroidal white pyrite
530	3	
531	1	Solid white pyrite
532	8	

Letter —

533 from H T Murphy
agt GTR
Glasgow Station
Ontario —

Pyrrhotite, says mountain off there — think he must —

McCreath analysis of Gen'l
Sample of Northern Range big
Nickel mine Sampled by
Miller - Called JVM Wh[illegible] Mine

Copper .449 -
Cobalt .193 -
Nickel 2.110 -

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534 D B Rice
Rendalia Ala

Morris 299 — good Cobalt,

313 } Mn on, little Fe. good Cobalt,
315 } " " "

312 Fe + Mn not so good no 313 & 315 -

316 - no Mn by blows - no Co by prick - Not dry -

2.19 = nickel
Trace of nickel
with a good Cobalt
It looks like Co
Co & Fe
mixed

Iron property of Wat Miller Iron Co - 299 - Has lots iron - don't know how much. Men best guess only
11 miles S.E. of Wat Miller Iron Co - little, & it has a considerable Co
arsenic + also something else
surface outcrop - it certainly has more
probably carry Mangan. than 1 % Co & Nickel 1½ probably
more / [illegible]

535 from Henry C Lewis
Bon Aqua Tenn
Another sample of Rich Wad

536 probably from J S Brossler
Shepherdstown Pa
Post Card

537 B F Hutchison
Lindside
W Va
only clay alcheminder

538 from C L Hutchison
St Albans W Va
No 1 Sample
Different from above

Lewis Bon Aqua Wad There is an wad
Kinds - tested two kinds - very poor
1 was rock wad the other sand containing
wad had lots organic - 2 was
now testing lighter button wad
looks rounded & also of flocated & worn
round - The other is dense clay
break + hard - 3rd kind hard, thought best of
Button wad very long
Button wad very long

Morris 307 Poa Columbia &
Calamo Jamaica a addition
rare metals say, lots of this
as float in fields of Josephus
Ordorff near 1054 Munster
Maryland —

Its the dense anthracite Coal like
wood, heavy, its very rich in Cobalt
The Cutten wood was a cement + most
all stone, but of the wood though which
was amazed its rich — I put the
anthracite wood pieces, back in 535
I broke it in two! —
This wood is perfectly Dacus Gachy

Morris 307 - float from Ironcroft
to a rare mineral probably
Niobic etc = M says lots of it —
320 Morris has found Cobalt — The [illegible] from
Negro [illegible] spots Cobalt but not [illegible] of it.

539 from NR Waterman —
~~[illegible]~~ Salt Lake City
looks like a Nickel (Colombo) ore
good — but low grade 3 grams
540 — looks like Bitumen, brittle, or Gilsonite
brittle asphalt, its lignite — No Co —

541 from-
S.H. Benton Letter
Acoma
Lincoln Co Nevada.
No 1 from J. Morrison, Pennsylvania
mining district Nevada
542 No 2 from Coffey & McLean Chain Bull Valley Nev
543 No 3 " Johnson claim North of Acoma
544 4 The Indian girl claim Ely Nev
545 5 The J. M. Pulsipher claim
546 6 Iron Mountain Benton's Ranch

No 6 looks like Nev microlitic quartz
4 w quartz quartz ore
5 "
1 white pipe-tree in white stone,
3 Copper ore
2 - Copper with peach pink - C.S.

547 from J. A. Chabot Hs No 2
Lake Megantic
Curious rock Que

548 No 1 - looks like bloom to
slate
549 No 3 Quartz specimens

582 on glass panning show lots
Mugell gold -

RGC 176 - Green 1½ to 2% Ni 1/4% Co
Silicious Iron ore -

RGC 597 - Light brown Light Wad
Very Rich in Co & Cr & Daly Soap
90 times stronger than Ludwig - pbby
4% anyway

603 - 20 times Ludwig pbby 1% -
595 12 "
601 18 "
581 12 all weak -
636

RGC weak
Pennsylvania

582 = O'Donnell, Winnemucca
Dup. of No 508 =
Sb. Ni. Co - rich -

583 - Frank E Black
Mohawk Arizona
Yuma Co -
Lot 2 508

584 " 7
585 " 3
586 " 6
587 " 2
588 " 5

Frank E Blocki Continued

589 Lot 2 No 4
590 " 2 No 1

591 from PW Zana
223 W Masonic Ave
Cripple Creek
Colorado,
Looks good - ni - Lellen

592 from PW Dinegon
Ephraim
my State - Utah

597 or 621 Cadenline Wad Drawer 557
Very Rich Cobalt 11

635 RDC
633 RDC } pretty from Drawer 7
589 RDC "
585 RDC "

593 SS Smith Garland Ga
No 1 – Pyrrhotite & pyrite

594 Has Iron ore – looks like dense
Red Hematite.

Prob. ably from Edward Thresher
Mulmonn – Tucson City oregon

595 No 3 & 2 & 5 Copper ore 4 4 & 1 & 6
Has samples come in pill box x 4
sent Co samples in

RDC 131 Has Nickel 5%
Morris 319 " King Stiny 4
131 is on a Sample from Ore
in Chester Co Pa

319 Morris is from No 1 pit of
Joseph Orondorff – only little
of it,

323 Mr Drake over 1 o/o
330 Morris "
328 " "
329 " over 1/2 o/o
327 " 1/4
326 " Nielson
331 " "

Somethings Marquette -

596 - from John Stenson
Deming Nellers
Lake -
Copper ore Comp Co Co Ct,

605 Morris Mining Co also nickel -

618 RDC - " "

Co .3 %

597 - from L. A. Graef
Blake California -
Galena with Cobalt Bloom.
No 6 - Ellery

598 No 3 Rock entirely impregnated with Cobalt Bloom - apparently ½ in bloom

599 No 5 Lillie galena, Calcopyr & dark pyrite & apparently some Bloom -

600 No 1 - Shunk some Bloom - no pyrite poor quality rock

601 4 - apparently dark pyrite & Bloom -

602 2 - weak generally distributed Bloom

603 from Geo Wright Wright NY

Pyrite & pyrrh -

604 Wm A Wall
South Pittsburgh Tenn
Sings & poison cattle - Clay like
Dr B -

605 from R Garcia
Station Satamina
Co Dr Ferrocarril Nacional
De Mexico -
Marked 1 2 4 -

606 X06
607 X01
608 3
609 2
610 5

Letter

---

from E S Payne
West Chazy
Neg

613 X01 - Neg Limestone & Marble
611 X02 Some Gloom. —
612 X03 Think Limestone

Wrote X02 has faint Limes Co

---

614 O. Horroll.
X014 - Very Curious Ore -
What is it? —

615 from Lewis -
Bon Aspen Tenn
Wm - Brown & Henry

616 - from L N Segun
Del Opp St Malo White Canada & Chuck -
Letter
3 Samples, put all in one -

Morris Westmoreland Trust Co.
Mrs McAlbrough agt -

349 346 345 348 351 347
344 343 350 & some in other
bag - from some place look
out for these as got from Co &
Being mag-net Can be Concealed
they are very fine grain &
must be crushed 100 mesh
& sized - Several sizes finer
than that with Smith Co
make good dep. -

636 Cassiterite I didn't
Dr make it get much Co. Doctor the
.73 Co Prob — I made another
1.52 Ni test on 5 grms got only
5 times Ludwig's Grit Slide
is Considerable Nickel
Really didn't get Ni —
Tested H_2O_2 Its a Min ore
The Mly Sol is yellow —
something funny about this
ore —

617 from Strauss
Lovelock Nevada.
Has No 4 — No Cobalt,

618 from Wa Yungling
Hagerstown Md
3 samples metal Rock put
all together —

Later No Radium

Cadelin 560 Radium Strong
Morris 305 Radium Strong
Lab 403 Radium fair

No is the Chrome Mine near Octoraro Creek
Lancaster Co Pa - fuchsite - serpentine -

305 Morris from hanging wall
rock from Thomas Babylon
property from Quartz vein
location same as No 302 -
West Minster was his address -

619 from the Arrapine Concl Club.
Manti Utah
No 4 Mn or Cu ore
620 5 Quartz ore
621 2
622 1 + 3 Drab Col Slate
[redacted] 4.

597. Dr mukes ·79 Co 1.14 Ni –

McCreath assays –

299	Morris	·237 Cobalt.	
– 315	"	·120	
597	Cartenline	·770 –	
620	"	·313	
621	"	·380	
176	" silicious iron ore	067 Co ·583 Ni	54.3

623 – from A O Holden
Operator B+O RR
No 3 – Oakfield Maine –

624	No 1	Slate full pyrites
625 –	4	Curious Conglomerate.
626	2	Extremely dense black rock

627 – from W F Williams
Portsmouth Va
Cobalt Ni ore powdered – Bottle
says from Wake Co N Carolina

~~Thos~~ Wm is Supt Telegh
Seaboard air line –
(with him had 7% Co
it probably has more + also nickel

Kirkegard whose brother used to
work for me in Anglaisia
- He has charge for 9 yrs of Madoc
Ontario, Arsenic works, He is
getting up Co to reduce Hauling
over Smelting arsenic works
sell me his Cinders - wants
yearly Contract -

Says the Cinders besides

Co	8 to 24 %
Ni	4 to 10
S	less than 1 %
Arsenic	3 to 5 %
Iron	2 to 6 %

Gal Silver, Sulphide Calcium, Carbonate
Etc -
Well and Simple -

636 - 3 grams quite pink in Nitric Sol.
probably 1% Co. weaker than 1% Co -
53 times stronger than Lindsay -

628 from Geo 7 O'Keefe
Pocotello Idaho
Not powdered samples
No 25 -

629	26
630	29
631	27
632	28
633	21
634	20
635	19
636	18
637	17
638	24
639 -	23
640	22
641	16
642	15
643	14
644	13
645	12
646	10
647	9
648	7
649	4

Very little sample -
2 dwts "

Continued

650	No 2	
651	11	
652	8	Letter
653	6	
654	5	
655	4	
656	3	
657	1	GR T+B

636 RDC

gave Dr 0.73 Cobalt
1.52 Nickel

658 from C H Sherwood Letter
Manager Postal Tel Co
Selma California
Pyrrhotite or Rhodonite Calcio Solid
No 4

658	No 3	Heavy black Carbonate
659	2	Copper Ore
660	8	black Carbonate white stone
661	9	Dirt -- Some black pyrite
662	5	

663 Hu No 6 –
664 No 1
665 7 Wrotilium No 7 u chromium

from Walter Schmidt
Desert Crystal Salt Co
Letter White Plains
Churchill Co

666 – No 2 Vanadium Nevada –
probably Cobalt.
667 No 6 Mn or Cu –
664 Curium Cumulus Colorado
669 5 Trap –

670 from J A Dunnaway
Lovelock Nevada
Schmidts ~~[illegible]~~ & Dunnaway
use same paper for wrapping
& appear to be same particles
No 4 Co Bloom – 4 Mi
671 No 1 Shing Medal Bloom
672 2 " "

673 A M Wallick
Skagway Alaska
No 11 Grocer Bay Peninsula
674 No 9 Black Hornblende
675 - 7 - Atlin Arm BC Copper

676 from W A Ramsey Letter,
Wonder Oregon -
Says the Cobalt, looks like smelter

677 from Thos C O'Donnell
Winnemucca Nevada
Dup of his old sample No 8

678 No 6 Dup his old No 6 -
Letter

679 from Sam T Romig
Deushalgville Pa
Sent letter - Trace Cu - Wad fine black

677 RDC strong Ni + Co
Dr assaying
Especially strong Ni

657 RDC is very strong
Cobalt, 3% I guess

680 = from Halsey Search
158 Holden ST
Paterson NJ
Samp to S.T. Just ore –
Has pyrite, yellow Crumbs
Has Co 1/4 % abt
Sent for more rock

Am interested on these 2
Nos 700 & Think is best Co

McCrieths Assay of solid
Clear Darby mine Erkaltite

Cobalt	14.300
Nickel	11.820
Copper	.008
Silver	none.

701 Was RDC has ~~very~~ a
Little Arsenic good Cobalt
~~but Lower grade~~
700 full of arsenic - good Cobalt
both in large granules
10 ft thick
These weds would be just
the thing for an arsenical
Speiss Co Smelting -
700 has thro it apparently
bloom - ~~Both~~

Mt Vernon property around
Cinnamon
697 old Dominion mine a few Cinnamon
Wind ore arsenic bloom of Vat arsenic
in it good Cobalt - RDC

681 bb - from Pilling & Crane
Mn ore "Blackburd"
682 PtC Kizagapaton Mn ore
India -
683 "Colon" Mn ore PtC
684 "Laroo" ore PtC

---

685 Sent by "Wm Schmidt"
from ~~Southern~~ Pearmo Nevada,
No 11

686 - No 12
687 8
688 10
689 9

---

690 from - - - - no name
Sage Wyoming
1 2 3 4 5 6 Bunched
No 5 "Lookalike Cu or Ni"
691 Heavy + green outlaids,

Doctors Record

140 Morris - Mn ore
Fe 1.09
Al 3.59
Co+Ni 1.20
Zn 1%

279 Morris
Co+Ni 0.42
Si 49.3

280 Morris
Co+Ni 0.1
Si 23.33

274 Morris
Co+Ni - 0.24
Si 7.57

276 Morris
Co+Ni 0.2
Si 20.8

275 Morris
Co+Ni 0.60
Si 5.2

272 Morris
Co+Ni 0.36

273 Morris
Ni+Co 0.39

277 Morris
NiCo – 0.2

281 Jmorris
NiCo 0.2

470 Lab O'Horrell.
NiCo 0.54

278 Morris
NiCo 0.21

308 Morris
Trace

311 Morris
NiCo 0.24

312 Morris
NiCo 0.23

313 Morro
NiCo 0.72

314 Morro
NiCo 0.23

315 Morro
NiCo 0.75

316 Morro
NiCo 0.14

176 RDC
NiCo 0.57

603 RDC wad
NiCo 0.85

597 RDC wad
Co 0.78
Ni 1.15

62 Norm
NiCo 0.16

-601 RAC wad
NiCo 0.25

582 Lab
Trace

533 Lab
CoNi - 0.09

635 RAC
CoNi 0.35

633 RAC
NiCo 0.25

619 RAC
CoNi - 0.3

617 RAC
NiCo 0.65 14.35% -ch

615 RAC
NiCo 0.37

634 RDC
MnCo 0.23

620 RDC 27.02% ash
MnCo 0.47

621 RDC 31.99% ash
MnCo 0.67

589 RDC
MnCo 0.31

585 RDC
MnCo 0.25

319 Moms
MnCo 0.20

131 RDC
MnCo 0.31

605 Moms
MnCo 0.12

636 RDC 9.30% ash
Co 0.73
Ni 1.52

2.1% NiCo — wad

0.91 Co

330 Morris
NiCo 0.12

328 Morris
NiCo 0.25

629 RAC
NiCo 0.37

329 Morris
NiCo 0.1

605 RAC
NiCo 0.15

618-RAC 28.52% ash
Co Ni 0.81

348 Morris
only traces

627 Lab 72.35% ash
NiCo 0.62

676 RAC
Co 0.86 6.62% ash
Ni 0.75

1.34 Co

657 RDC
Co 1.26 6.75% ash —
Ni 119 —
246 —

677 Lab
Antimony ore, only traces Co & Ni

678 Lab traces Ni Co

677 RDC
Ni Co 1.46 6.02% ash

595 RDC

692 from Frank C Moore
Melrose
Montana.

693 from Milton G Cage
Attorney at Law
Boise Idaho.

Magnetite,

694 - from M P Kay
agent NPRR
Cheatum
State of - Washington ~~St~~
Hco. No 14 -
Looks like metal Ore - Ni bloom.

Dally's test,

391 ten times equal to 18 for wood
382 4 " 8 "
383 4 equal to 20 for wood
384 4 " 30 for wood
385 6 " 25 times
386 5 " 25 times
387 trace
388 5 25 times
389 twice equal to 14 for wood
390 5
392 trace
393 "
394 3 times equal to 11 for wood

Morrow Wood from Bon Aqua

Comp from May - appears good
~~387~~ good Co —

391 M. best on final 1.80 - 3.2
394 good on final 3.40 1.6
390 3.72 1.28
382 fair on final 2.34 2.66
388 — good on final — 1 gram
384 good final 2.6 2.4
385 good on final Rockwell 3.94 - 1.06
386 fair to good final — 4 — 1 gram
389 4.29 .71
393 — 1.56 3.44 .5
387 4.3 .7
383 fair to good final, 3.91 - 1.09

695 from S B Brown
Chelan. Washn State
same place 694 Come from
Hole No 1 green rock -
looks like ni rock -
Letter '

696 Red Rock hole No 2.

---

wrote —

697 from C H Taylor
Deff Montana '
looks like Copper ore

Accounted for by
706 had three Co

698 from JB Morrie
Browning
No 8 Montana

699 – has No 6
700 9 Copper or Ni – dark pyrite
701 5 Andesite
702 10 Pyrite
703 7 Quartz
704 1 Pyrite
705 2
706 4
707 3 Pyrite
708 11 "

709 from MP Ray Bell
Cleafum
State Cu – slm
Has No 13 – Sangs Mountains
Ni + platinum –

710 from TL Henritzy
729 Cooper Bldg
pyrite Denver Col

711 - Walter Schmidt
White Plains
Nevada

	No 18	
712	19	
713	13	
714	16	
715	15	
716	17	
717	14	

718 Walter Schmidt Continued

	27	
719	24	
720	25	Cu or Ni
721	26	"
722	23	possibly Ni
723	21	
724	22	
725	20	Curious -

726 from Geo H Downs

North Powder

No 16 – Cu Oregon

727	8	
728	17	
729	5	Cu
730	14	
731	13	
732	20	Cu Little
733	23	
734	19	
735	4	dark pyrite
736	2	
737	1	
738	3	
739	21	Cu
740	12	pyrite
741	11	Curious – Zn Cu & cobalt?
742	15	Fe in pitchblende
743	10	Stibnite Dr to see
744	9	Silicified Wood etc,
745	7	fine pyrite
746	24	
747	6	
748	22	
749	18 – ~~Cu~~ Fe	
750	25 Cu	

751 from W E Smith
Genesee
Idaho
No 1 243 all put together

752 Source unknown
marked No 31
755 No 30.
753 dittos marked 32
pyrite

754 = from Hunsinger Kelly
Albertus
Looks like Samarskite.
gave to the Dr

756 from E Burke Kelly
Lakeview
Oregon
Rays Cobalt

RDC, 754 — Very strong
Was Thunk Underbrady at
its farm Overall creek, on Overall
Page Co property, 2nd Run
Petroleum Sandstone Onlap
RDC nearly at Minimum Co
heavy [redacted]
Dally Sage) 180 times stronger the Ludwig
~~420 from Overall Creek, Page Co~~

Morris Wade

			ash
410	6	Times Ludwig	54.1 %
411	32	"	46.18
418	16	"	44.21
422	40	"	52.65
417	20	"	54.79
414	18	"	60.09
420	49	"	52.44
424	36	"	63.63
423	28	"	47.8

Doctors determination ash

700 RDC
1% Co + Ni - 25.4

701 RDC
.26 Co + Ni 9.39

697 RDC
0.82 Co Ni. — lost

757 fm W. H. Oden
37 Murray st
Nashville Tenn
Cactus (Curios)

758 from J F Dodson
Denver Colorado
No 1
759 No 2 No Collar
760 No 2 Black Rock –

761 fm M E Sheehan
Cambray
No 2 New Mexico
Very Curious like dense Mn
762 No 1 Curious –

~~763~~ from D S Morgan
Lucin
Box Elder Co
Utah
Ca Carbide
~~April fool~~

1.02 Corn

about 1.3 in wood [illegible]

Dr Analyses

411 M	.70 Corn	46.9 ash	
~~[illegible]~~ 422 M-	.68 "	55.8 "	
417 Mom	.63	30.91	
420 M-	.62	55.42	
424 M	.50	62.63	
423 M	.62	49.97	
754 ROC	1.36 Corn	4.6	
800 "	1.00 "	2.92	

Notified him - No Co. or Ma -

763 from Thos C O'Donnell.
Winnemucca Nev
1102 Curious -
764 - 1104 Hematite.
765 1103 "
766 1107 "
767 8 Very heavy white, Curious
768 6 Ni -

Letter

769 from O. Horrell.
1019 Front Range Co.
770 - 18 Very Curious Dr see what it is -

771 - from H H Koehler
No 1 Mosel. Nevada
No 2 Cambr

772 Henry Mignac
Notre Dame des ~~[illegible]~~ Anges Que Seller

~~773 Jack W Smith~~
~~Murfreesboro Tenn~~

773 - from O. Horrell
Front Royal Va
No 15

774 Wm Hollinger
Fortney Seller
Pa

775 – from C P Tate
Seattle Wash
Room 428 N Y Block –
Selenium Ore from the
"Peabody Mine"
About 2 lbs of it – solid specimen –
looks like Microcline –
Very Curious – have Doctor
~~test~~ it –

776 – Unknown Source –
Heavy Duck bag – sent to
Menlo Park – ~~[illegible]~~ d here

777. O'Horrell
Front Royal Va
x017 Red – Curious –
Like Red Jasper –
778 – 16

Dr Assay 778. 0.60% Co Mn Ash 56%

779

Pyrhotite - Solid + a blown ore
No address
its from Texas
My address on Tag -
Carles, Mullady Iron & for Co -

780 - from Tom Lang
Franklin N.J.
Curious Pyritics -
Dr the assay

781 - from Victor H Boyden Treas
Williams Supt Tel Portsmouth Va
Wake Co Co & Ct mine -
Sample marked "Supposed to be a good sample of the Co & Ct ore"
looks like a hard wad - Dr assay
M + Co -

Letter.

782 – Same person
Marked "Supposed Co. Salt
Ironite" Ward Like 781 Dr. Gosney

783 – Same person marked
"Supposed to be pyrites"
Is White Solid pyrite
Dr Gosney

784 from Geo N Gooding
Austin
Nevada
No 1 Letter

785 No 2 looks like Copper

786 from Felipe H Ortiz
Parras Coah Mexico
Letter – Dr Gosney

787 - 0.3% Co Ni - 80% ash -

788 - 88% Ni + Co mostly nickel 66 2/3% ash
Metified Iron

Dr assay 0.35% ash 80%

790 - Trace Co Ni ash 5%

0.25% Co + Ni - ash 21 1/3%

787 from E.S. Chadoney
Cameron
Colorado
Letter Dr assay -

788 from G. P. Atchison
Grants Pass Oregon
Dump Is Cobalt mass - looks good
Letter Dr assay -

789 - from Wellman Dept Tel
Selaboom's ar Ln - Wake Co
Cobalt (lead) - 2nd Cat
read -
Dr assay

790 D.S. Brown
Chelum Wash
Ign Slid.

791 - from H Hemaloby Mining Engr
Sementento Tex
Contained Iron
Letter

792 = from MP Kay
Cle-Elum
Washington State.

This sample is his old No 7
that was Hematite with Co & Ni
in mostly Ni – Have had
2 or more samples of this
ore – He now sends a large
lot 792 is from 35 ft deep
in it he sacked – I find it
very magnetic –

793 – is same top from

794 is from Kay marked sample
No 12 his old No 2
Must be some mistake as it
dont look like Hematite
at all as described in 1st
sample –

795 = from O Horrell
Front Royal Va

Magnetite –

Assays 6.97 Cobalt
1.03 nickel

Arsenical - Can be
Conc Magnetically
Sand to Cutter $60 (gold)

796 = from T O Nixon Letter
Opr ~~[illegible]~~
Centerville
Wad Tenn.

797 from Joseph La Montagne
Champlain
Letter NY —
Looks funny - (black)
Calcite Quartz —
gr

798 - from SH McKee
803 Farmers Bank
Pittsburgh Pa
another address
1204 Wood st
Wilkinsburg Pa
Big chunk pyrite (grey)
+some Calcopy
from Standard Consol Mines Co
Quartzburg Dist Grant Co
Eastern Oregon —
Letter — Cobalt

Assay of Ores Caledonia Wad

Peroxide Mang	18.00
Protoxide Cobalt	3.00
" Nickel	1.25
Per O x Iron	30.00
Alumina	5.00
Lime & Magnesia	2.00
Silica	8.00
Loss on Calcination	32.75
	100.00

799 from F K Strasser MD
Letter San Jacinto Cal
Lockhart Lake Co ore Dr

---

800. from B H Weaver
Catasauqua Pa
Box 4 lbs Manganese ore
Letter in Bag

Send him Cobalt Samples - Wad etc
Kelly

801 from O Warner
Eagleville
Churchill Co
Nevada
Hes No 4
Looks like "Cornwallis"
Dr assay

802 Hes No 5 2% cobalt pyrolusite
in Quartz —

803 Black heavy ore
Hes No 3 — Doctor assay

804 Hes No 8 Heavy black ore look
like wrenwitte, but has green
stain on outside —
Doctor

805 Hes No 1 Iron stained heavy
Quartz gangue
Doctor

806 - Hes No 2 Light yellow
decomposed stuff +
Doctor

807 Hes No 9
Quartz —

808 Hus No 10
Same kind stuff as 807
Dr assay

809 Hus No 6 –
Quartz - pyrite 3%
stains peculiar green

810 – Hus No 7 Quartz 1/2
dark heavy rock 1/2 –

811 = Box from Mexico no name
on it
1 piece very heavy black
smaller pieces pyrite –
Doctor assay

812 from W P Ray Letter
Hus No 16 Chelalum Wash
Iron ore 53% water Know
of any Cobalt or Ni

Doctors assay of Copper
supplied by Moran

Electrolytic Fe_2O_3 0.107 %
Non Arsenic Fe 0.073

Leake. Fe_2O_3 0.08
Iron 0.056

Contains Antimony Lead, Bismuth,
& Arsenic –

~~Hlab~~ Lab Drs Cross

Lab 781	MgCo	.6	ash 56.78
" 789		.35	80.04
" 790		Traces	4.67
" 791		.25	21.00
" 787		.3	79.19
Morris 479	Morris	- .44	56.76

Morris

669 - Morris - Amyl process		6	times Lindsay
630		20	"
628		6	"
640		4	"

Dr analyses -

			ash
Morris	468 - Corth	0.2	
"	577	0.99	23.81
"	464	0.16	
"	553	0.48	
"	580 } less than	0.10	
"	581		
"	476	0.40	
"	549		
"	550 } less than	0.10	
"	471		
"	573	0.54	
"	567	0.70	

P

Or assay

Lab 801 Trace Co Ni Vanadium present.
810 " "
Morris 594 0.56 Co Ni -

813 = Jos Lemieux
Sample B Weldon Prov Quebec
See of it and Weldon

" P
814
815 No 2
816 No Number

817 from Iron Mine at Stewartsville

Morris — D

		ash
140 —	1.20 Cu+Ni	0.72
279	0.42 "	49.53
280	0.10	23.35
274	0.24	7.59
276	0.20	28.7
275	0.60	5.20
272	0.36	
273	0.39	
277	0.20	
281	0.20	
278	0.21.	
311	0.24	
312	0.23	
313	0.72	
314	0.23	
315	0.75	
316	0.14	
62	0.60	
319	0.20	
605	0.12	
330	0.12	
328	0.25	
329	0.10	
411	0.70	46.96
422	0.68	55.82
417	0.63	30.91
426	0.62	55.46

1.01 Cu+Ni
1.05 "
.82
.96

.93 Cotti
93 "

	Morrow Wards Dr away Cotti	Ash
424	0.50	62 63
423	0 62	49 97
553	0 48	
476	0 40	
577	0 99	
573	0 54	
567	0.70	
594	0 56	
468	0.16	
566	0.68	
650	under 0.5	
662	" 0.5	65.8
661	" 0.5	
616	" 0.2	
618	" 0.2	
659	" 0.5	83.2
553	Cotti 0.48	54.6
580, 581	less than 0.1	
476	Cotti 0.4	
549, 550	trace	
471	less than 0.1	
577	Cotti 0.99	24.60
573	" 0.54	68.40
567	" 0.70	63.30
594	" 0.56	66.2

No			Cash
468	Co Ni	0.16	
566	"	0.68	55.10
555	"	0.49	65 50
590	"	0.85	53.80
464	"	0.10	—
564		0.40	—
568		0.31	—
576		0.92	55.4
573		0.40	—
Lab 804 —	No Co or Ni		
Lab 811	Co + Ni	0.10	—

Note = Newly discovered arsenic mine
1903 — owned & operated by US Arsenic Mineral
Co Pittsburgh Pa at Pilot Mountain
17 miles from Christiansburg
Montgomery Co Virginia. Well defined deposit
8 ft thick | 25% arsenic (arsenic mineral)
est Cost 70 c lb

No 6

818 fm M H Chrysler Lellen
Marcola Oregon
Pyrites - dark -

819 - from McKay Lellen -
Creatum Wash

[illegible] No 2 ? = rec'd Feby 4

Th limestone with Calcopy &
fine grain dark pyrites
So fine apparently alums
Calcite dark — looks good -

good Co+Ni in one
& Chunk –
Dr Wm

820 – from Victor H Boyden
Raleigh N Carolina
Wake Co
Marked. Supt Teigh Williams mon
Cobalt ore
821 – marked – "Don't Know what this is"
822 Marked – "Cobalt ore"
823 " " Magnetic mon ore pyrite etc

824 from J O Nixon Letter
Centerville Tenn
825 "
826 No 4 + No 3 + No 2 + No 1
Unlikely rocks

827 from Victor Boyden
Raleigh NC
Says he was unable to identify
which Came with the Nodule
(Round) – was Considerable
Cobalt, Letter

828 – Nodule –

Dr Grothe analyses

Morris –

604 –	MnO	0.4	Silica 61
570	"	0.8	55
545	"	0.4	61
792		0.54	61
611		0.41	53.6
546		0.60	62
572		0.83	63
639		0.67	61
438		0.52	66
812 Lab		0.54	—
588	Morris	1.32	—
574	"	1.38	52
590		0.8	63
550		0.2	25
618		0.51	62
382		0.44	53
580		0.4	61
754		1.40	46
476		1.00	—
552		0.63	43
565		0.3	56
568		0.47	62
660		0.5	57
552		0 63	43

2.76 MnO

	Cm'	Si'
M-384	0.5	47
549	0.5	4
564	0.5	27
575	0.60	58
616	0.2	61
579	Smacl	13
421	"	61
563	"	31
623	0.5	6
75	0.5	27
588	Smacl	81
602	0.5	63
603	smacl	31
Lab 804	"	14
Mom 727	0.87 Cu-.5 Mi	59
576	0.92	58
773	0.81	53
478	0.26	69
774	1.37	38
390	0.5	71
Lab 801	smacl	89
810	"	44
805	"	86
Mom. 764	0.5	12
759	0.98	37

		Mn	Si
Morris	777	0.85	50
	766	0.95	26
	768	0.8	47
	751	1.10	47
	747	0.63	57
	577	0.90	25.81
	748	0.2	59
Lab	809	small -	91

829 Lab - small sample
Cobalt Concentrate, [illegible]
from
Com B Hornberger
Littlestown - Penna [illegible]

Extraordinarily rich in Cobalt
25 0/0 I guess

~~Note~~ -
Cobalt sample read
it is quite rich in Cobalt tell
me about it, its location
& price desired
J A E

						Silica
Morro	1017		0.52 Cu		-	
"	1136		1.64 Co		0.02 Ni	10%
"	1137		1.49 Co		0.60 Ni	— Co
Lucia	4	1.1	0.5 MnO		—	55 1.01%
	49	2.8	1.31 Co		None	40 2.18
		1.33	0.72 CuNi			46% 1.33
	15	0.19	0.3 CuNi			66 0.69
	31	1.40	0.69 "			53 1.47
	40		0.54		0.31	1.04
	43	2.8	1.38 Co		1.06	15 MnO 1.62
	37	1.44	0.82 Co		—	43 1.57
	52	1.4	0.47		0.37	42 0.81
	35	1.2	0.36		0.10	62 0.94
	50	1.4	0.6		0.3	58 1.42
	36	1.6	0.54		0.26	50 1.08
	39	1.5	0.75		0.15	42 1.29
RDC	1176		0.86 Co		—	1.2% 0.88 CuNi
"	1137		1.45 MnO			8% 1.57 MnO
"	1008		1.36		0.24	37 2.19 Co
Morro	753		1.60 CoNi		—	38 2.50 CuNi
"	758		0.88		0.39	36 1.37
"	574		1.38 Co		—	52 2.69 MnO
"	590		0.8 MnO		—	63 1.26 MnO
"	588		1.32 "		—	
"	570		0.8 "		—	56 1.81 MnO
	572		0.83			63 1.32 MnO
	551		1.00			39 1.63 MnO

Fig. 6 Morro wads to the point 1.65% Structure Valley Co Ni Cobalt

			Si	Edvardsen
Morro	747	0.63 mCo	57	1.41 mCo
"	779	0.64 Co 0.27 m	47	1.17 Co
	751	1.10 mCo	42	1.87 mCo
	775	1.10 "	44	1.82 mCo
RAC	1004	1.20 Co 0.84 m	19	1.50 Co

830 — from Caleb G Collins
39 Broad St New York City

831 from W J Whittlesey
Batesville Ark —
He lives at Columbia Tenn
is the man Morris said
was going to Arkansas
to look over many mines
drawed and samples
to show him —

832 Specs from J Noseworthy
15 Victoria Street
St Johns
Newfoundland
Red garnets —

833 from F Graham
Cartersville Ga
Very ~~strange~~ rotten rock
green nickel like Calif —
Bag of it 1/2 put in Record
Case

834 — Mucked ore (Like New Cobalt ore)
from John B Young
410 S L W

Tacoma Washn

835 — Pyrites from J N Whitman
3701 Powelton ave
Phila Pa

836 — Sent by Norris a sample
of Copper Pyrite received from
Chas E Ashcraft 11 Franklin
St — S S — N Hampshire
Sup 4000 tons on dump

837 from I B Burnham
Essex N.J.
Pyrites

838 Jno W Strawn
Ozsana NEV Via Lovelock Nev
Hole No 6 —

839 – D W Ormsby
Operator
Skagway
Maybe Mahogany – Alaska –

840 John S Watkins
268 4th St
Laramie Wyoming Terr
Only rock –

841 – L Page – Red Rock – (Pracho)
Aragonia –

One piece Copper Stain –
842 – Quartz – red stain –

843 W E Hoyt.
Rowenswood
West Virginia
No 8 – some pyrite in it
Maybe SE Mapachel – coralah
it –

844 - P E Le Blanc
St Jacques, Montcalm Co
~~Quebec~~
NOZ - Prov Quebec
Solid pewter - peculiar -

845 - from Ross 70x4 Stockbrokers
Toronto -
Its from A E Hogue Mem
Emp. Midway BC -
Think it marked ore -
Dr assay -

846 from D R Young
Harrisburg
Wash.

847- W E Hoyt.
Ravenswood
West Virginia
No 7-3-5-6-
Sandstone with something in it.

848 O'Harrell
Front Royal
Va-
Like said specimen or Min-

849 J M Detrick
Lorraine
Va-
244-
Wood like-

850 – Wa Harman
White Horse
Yukon Jen-
General copper Copper
Stained –
851 This is wrapped in paper in bag

852 JB Monroe
Browning Montana
No 11 – Basalt,
853 13 Rock –
854 – 12 – Bluish non ore gold –
855 14 = Pink-looks like Calcite

856 JP Nichols
PO Box 307
Black Light mineral may
be Black Diamond –

857. C P Johnson
Aurora
Minn —
Only Quality —

Lot 5

858 — Griffith Richline
Palmdale, Los Angeles, California
By lot samples bag 3 Quality very good

859 — White pomelo No 8 —

867 Hes No 7 Red —

868 Hes No 1 Like Limonite,

869 Red — No 5 —

870 Trap with Cappe Stania No 2
871 — Purple Moor grafts, No 6
872 — Red Peach — 4

2nd Lot -

Another Lot of Kirchlinas -

873 - 4 X.

874 - 1 X

875 2 X X groups -

876 5 X

877 3 but supposed to 3 X

3rd Lot -

878 No 1 - Kirchl

879 No 2

880 No 3

881 5 White Limestone with

Lot No 6

882 No 7

883 No 4 Jade black one -

884 No 4 Red piece -

885 No 6 — Ni stain 6th Lat.
886 No 1 — strong stain Copper.
887 No 5
888 3
889 — 3
890 2

Lat No 3 — Kerchline

891 No 1 Copper stain.
892 No 2
893 No 3
894 No 4 —
895 Special — Clay —
896 No 5 —
897 No 6 —
898 No 7

Lot 3rd Kurchline

889	No 8
890	No 9

~~Lot No 4~~ Kurchline

891	No 1
892	No 2 Copper slaw
893	No 3
894	No 4
895	No 5
896	No 6
897	No 7
898	No 8 gyrotor

899 - No 9 4th Lot Revelation

900 — No 10

901 No 11

902 No 12 Copper Stand

903 No 13 pendants.

904 No 14

905 No 15 Copper stand

906 No 16

907 No 17

908 No 18

909 No 19

910 No 20

911 No 21

4th Lot. Kerchlum

912 No 22

913 No 23

914 No 24

915 No 24

916 — No 26

917 27 Iron ore

No test — 28 Jungstale Lum

918 HH Thrush

No 4 Front Royal Va

919 No 6 — Iron ore

920 3 Lum Wood

921 5 Wind land

922 No 2 Semi Wood

~~Weak Co~~

25 00

50 00

~~Weak Co~~

Thomas

923 - No 1 Shist -

924 - No 7 Hard Manganese

925 John Y Hopkins
2020 West 3rd St
Little Rock
Arkansas

Band -

926 - Sample from Wolf Creek
Hickman Co Open Lands of
W S Normelly Morris Ruges
about 1 - semi hard Shiny boy Crodial
Wad -

927 from same man Pone Creek
Perry Co Tenn occurs in
Nuggets good set of it.
4 miles South of Brits Landing
Tenn River

Drawing

928 Col 9th Aubrey
Carlersville Ga
Working Wood

929 = Sample pyrrhotite from
J B Burnham
Essex NY

Has commercial ore Nickel
Castle Co - have asked
for 4 lbs —

930 from W J Crowley
Butte Montana letter

Pyrrhotite has some Copper Nickel Co
Do assay

931 from H L Stein.
79 West St 1st South
Salt Lake City
No Cab alt, Letter

932 nq

932 from Dr C D W Colby
Dillsboro NC.
Sample was sent at request
of Morris — Letter
N01

933 - N02 — nq nothing full
934 - N03 nq Hummel

935 - from the Estate of Leal McWhorter
New Haven Conn
Mine John Day Valley Oregon
Arsenic Cobalt rich
possibly there is Silver & Copper in the ore
have written for sample

936 Cab - from Jas McIntosh
Newberry N Carolina -
Reputation - Letter -

937 fm Ralph A Dykstra
Civil Engr Ballground
Georgia

938 R W Walker
Dahlonega
Looks like Twin - Lumpkin Co
Georgia

939 C O W Colby
Hickory N.C.
Would he say, Dentelbach it -

940 - Miss L L Knoble
Carter Wyoming
No 3.

941 No 2 -

942 No 4

943 No 1 pink Limestone -

944 J E Stone Talladega Ala
Wood - Brown & Lightfoot

945 Ralph A Dykstra
Tollar Texas.
Blue - Very Curious Dr Cuney

946 - A L Russell
Basic City
Asbestiform with
Minerals Curious - Or - Virginia

947 Thos S Ellis
Gallatin Tenn

947 from Wade Allen
Anniston Ala -
Ruckum ore -

948 Hill ore -

949 Wirtz Hill ore

950 - Thos L Cook
Alpine
Ala -
No other no

O.1 Co –

951 = Rev JW Bigham
Marion Ky

Man saw at Ft Mypo
Received at Barton Fla – Big piece
blue hard manganese from the fluorspar
dist – Lookfaw –

952 Jacob M West
Rialto
California

953 – MF Shuford
Fayetteville
Reptiles – NC

954 JB Boling
Travellers Rest R.F.D No 3
Greenville Co S.C.
Wood –

955 – Kentz & Cutting
Asheville NC –
Silicate Al Dense – Dr Conway

956 – B Y Fretwell
Sage Spec & Plat. Danville Va –
957 – Spec S mine –
958 – Magnetite – Sent Sample Bof

959 O'Horrell
Front Royal Va
Galena or what? Dr.

960. S B Green
graphite & Mica Franklin NC
sent sample Bof

961 - Edwards Butts
57 Evergreen Place
East Orange -

962 Of a Bishop,
Mushroom Honey Mucus
Nonhonolco Tsum
Solid white + yellow Sprite -
Says plenty for sulphuric acid -
He owns it - Dr Grathe -

123 Wilson Dr Assay Co ni
of Silver

963 from Frank T Tooker
Crestone Colorado
Crestone,

8.8% Ni
14.17 Co
Concentrate made from ore — Considerable gold.

964 from B F Dugan
Blackbird
Idaho —
Sample of the Idaho arsenic Cobalt ore — low grade —
Crushed to 100 mesh

965 Same ore Concentrated on glass by Edwards — Dr assay

966 from R J Dreacher
Marion Ky
Lump 10 oz

967 W J Whitthorne
Hts No 2
Columbia Tenn

Cushman Ark Mn

968 No 5
969 No 1
970 6

Surys Mines near Blackfoot
Idaho –
Jones Letter is from Salmon
City Idaho –
These are have no number to
Surveys at Blackfoot –

Whitehorne Continued

971 No 4
972 No 7

973 – Clean powdered black
wad from Cottstdams
Box 153 New Decatur Alabama.
Quartz rich Cobalt ~~on~~ green in tool
tube – Dr Ashway –
Write him –

974 W C Justin Jr
Sylva NC

from 1
975 from R O Hall P O Box 372
sample 1 Ashland Oregon.
Sample from Eagle group of Claims
10 in Number 7 ft tunnel
30 ft on ore – 600 ft tunnel
976 – Hawkeys group claims 5 claim
600 ft tunnel 4 ft shaft – Sample 2 – 20 ft
wide. – See letter from Jones, No 2 looks like Co
on

977 W W Parker M D
Smithville Tenn

Manganese Wad (Brown)

978 galena

979 - W B Murphree
Hohenwald Tenn

Big Coxfull -

980 D W Shofner Cellar
Mount Pleasant
looks like good wad from Tenn
Maury Co.

Same looking wad as at Cellar

981 J F Brownlow Letter -
Columbia Tenn
Brown Wood - Sample to of it

982 J H McWhirt
418 H W Hellman Bldg
Looks like Arsenic - Los Angeles Cal

983 N A Bibikon Ph B - Letter
formerly geologist Atlantic & Pac RR.
489 Hyndson ave Brooklyn N Y
Wood -

984 - Thos J Craver
R F D 1 Box 36
Winston-Salem Forsythe Co NC

985 - Daniel Albright
Box 312
Graham NC
Small piece Ground Wood -

986 H G Evans Lille
Columbia Tenn
Wood -

987 E T Kirksey
Magnitite - a

988 Joseph Warner
Warner Prop Co -
Nashville Tenn
Big brown wood - United Wd Co -

989 - From Dayton Hunter
Elizabethton
Tenn
Heavy Mix - No 3
990 " Black - No 4
991 " Brown No 2
992 " " No 1

993- Jaap + Miller + Low
Charlotte NC
Brown wood like stuff -

994 H L Stein
79 West South St
Salt Lake City
Curious pink + green ~~like compact~~
rock - Dr Groth -

995 JW Fisher
Henrietta NC
Wad brownish -

996 F J Tooker
Crestone Col
graphite.

997 - Cobalt ore today -
Looks like nickel ore
Dr Groth

998 J. A. English
Mt. Pleasant Tenn.
wadlike stuff.

999 G. L. McKinna
Horseshoe N.C.

1000 J. M. Rigdon
Painter N.C.
brownish wadlike stuff

1001 A. J. Newman
Hendersonville N.C.

1002 Mary C. Pitman
The Plains Virginia

1003 Lentz & Cutting and sample box
Asheville, N. C.

1004. Henry S. Fitch
654 Fell St.
San Francisco
green Sapentin like stuff.
and sample box

1005 Same as 1004.
green Sapentin like stuff

1006 Same as 1004
green Sapentin like stuff.

1007 Same as 1004
pyrites

1008 Same as 1004
green Sapentin like stuff

1009 Same as 1004
green Sapentin like stuff.

1010 Same as 1004

blue stuff.

1011 C E Jones, Last sample bag

Carysbrook, Va.

1011 — gray green bag No 1
1012 — " " 2
1013 " 3
1014 — No 4
1015 " 5
1016 " 6
1017 " 7
1018 " 8
1019 " 19
1020 " 10
1021 " 11
1022 " 12
1023 " 13
1024 " 14
1025 " 18
1026 " 16
1027 " 17

1028 C B Hill Room 3
1505 Penna Ave NW
Washington
Quartz Vitreus, with very fine
wood Pitch in test tube —
Looks good — Dr Casey

1029 C W Pearl ~~Sent sample box~~
Kingman
Arizona
Dr Casey

1030 Wm B Homburger Sent Sample box
Littlestown Pa

1031 Southern Express Co
Wide Plains Mo.
No. 5 Sent to John Morris
Forwarded here
been in the great box

1032 M. J. Rainey & Co

No. 1 108½ East Houston St.
San Antonio, Texas.
heavy pipe

1033 - No. 2
1034 - No. 3 - Red Stuff
1035 - No. 4
Letter

1036 - No. 1. Same as 1031 Same party.
1037 No. 2. — " " — —
1038 No. 3 — " — " — " —
1039 No. 4 — " — — " —
(in small boxes)

1040 B. R. Thomas
No. 1. Waverly, Tennessee.

1041 - No. 2 Same as 1040

1042 - No. 3. Same as 1040
letter.

1043 from Chas French Toms
Hendersonville Tenn
No 1 pyrite

1044 - The balance pyrite -
Dr Grothe assay for Th + Bi

1045 R T Wolleston
Logan Idaho
Magnetite Letter.

1046 ~~H R Kent Box 804~~
~~Alva O.T.~~

1046 B.Y. Fretwell
Danville Va
dirt sample box

1047 R-4 Box 62
El Dorado Nevada

1048 A L Russell
Basic City
Blackstuff hard
Sent sample Dep

1049 Thos J Bonner
Rives Tenn.

1050 H C Weidner
Blackbird
Cobalt ore - Idaho
Dr Gray for Ni Co -

9.6 Co Ni -
Ore not Cacld

1051 G T Wike
East Laport N.C.
sent sample leaf

1052 = Wade Allen
sent sample leaf
X01 Anniston Ala

1053 2
1054 3
1055 4
1056 5
1057 6
1058 7

1059 C Gremshaw
Montvale
NC

1060 – P. L. Williams
Sherman Wyoming

1061 O. W. Rash Pres.
Union Bank & Trust Co
Hendersonville, Ky.
Mang. Wed

1062 W. S. Carpenter
Lincolnton N. C.
R. F. D. No. 6
Wad & Sale

1063 Sent sample copy
D. C. Roberts
Carthage Tenn.
Wad.

1064 C. E. Jones
Depot and Tel. Station
Columbia C & O. R.R.
Earysbrook Va.
wad

Dont think electrolytic method
much good not enough of Cu
oxidized –

Experiments with separating Co Cu flakes
with KS & KCy –

No 1 Solution
100 cc H_2O 30 grams KS. put in 5.30 PM
20th Nov, pieces taken out 9 am 24th &
put in various strengths KCy –

1/4 strength Kcy 9 am 24th cold
1/2 " "
3/4 " "
full strength Saturated KCy –

The flake CoCu I put in pocket & made
anode in 21% KOH for 24 hours –
they worked & put in strong KCy –
~~The~~ part of the Cu is oxidized & dissolves out
separating the flakes fine – this
is a ~~good~~ fairly process also –
Method for flake surface – 40 hours taken
out shining black as if something
had deposited on it from the KOH,
but I am sure this deposit
But flake CoCu alone put in mixed strong
KCy warm the Copper dissolves
I want to know how much Co dissolves. [illegible]

When fresh CoCu flakes put in very weak HCl warm the Cobalt dissolves the Cu acting as Cathode.

It looks as if KCy alone would do the business but think using KS soaking 24 to 48 hours + then KCy to Catch as the Cy apparently need not be so strong.

1065 ~~J. M. Persons~~
J. M. Persons
Hamblen County Tenn.

Fine Wad (Bag.)

1066 D. B. Roberts
Carthage Tenn.

Wad. Ans. #73 Sent sample bag

1067 Grant Davidson
New Marion Hotel Marion Va.
Wad

1068 H. D. Rubm
Mt. Pleasant Tenn.

Poor Wad

No 171 –
Some very rich wad from Reinhart
" average of vein 35 ft long 4 feet
deep. width vein 4 to 6 inches wide.
Lincoln Co –
Mr. Quackenbush 166 is very strong

1069 L. C. Butler
S. Lift — Butler Co —
Ore and Metal Selling Agents
81 Nassau St. N.Y.

Sold!
high in Co

1070 The Eagle Mining & Mfg Co
Reading Penn.
c/o Mr Louis Adler Temporary Office 521 Penn St.
Mines at Saucholgrille & Albertis
Berks & Lehigh Co.
(very hard rock)

1071 ~~Congaston~~ Auston Dotson
Fair View N. C.

Looks like a Many Sson Ore

1072 Dr. E. S. Warlich
Hazel Shoe
N. C.

Bon Wad.

1073 T. L. Cook Sent sample by
Alpine Ala

Sample No 1. for Cobalt and Platinum

1074 Ralph A. Dykstra
Ft. Worth Texas

His No 1
funny stuff found below Manganese

1075 = His Quartz sample Sent sample Lab

1076 J. A. Brisby
Lawrenceburg
Lawrence Co Tenn.
Wad

1077 A. J. Beck
Penrose N.C.
Wad

1078 John G Worth
66 Broadway N.Y.

Examines are with Vanadium & Radium
I will try for radium

1079 D. S. Ryan Sent sample box
c/o W. U. Tel. Office.
Hot Springs Ark
Mio No 1 Wad with much Quality.

1080 D. S Ryan
Hot Springs Ark
Fine Wad

1081 Jno M. Smith
Bessmer City N. C.
Wad. Sm-amlyn

1082 J. A. Edwards
Talladega Ala.
Wad with Charcoal

1083 S. P. Mayberry
Mayberry Mill Co.,
Columbia Tenn.
Wad

1084 John Garrett
Mt. Pleasant Tenn.
Fine Wad

1085 Geo. L. Buyers
37 north high St. Columbia
Penn.

1086 J. M. McGuire

1086-No 1. Chas. Mort.
to the Dr. for Hy Stu. Co.

1087-No 2 - Morgan McGrow
Given the Dr.

1088-No 3. Contains Stu and Hy
given the Dr.

1089-No 4. Probably contains Stu. Hy
Given to Dr.

1090-No 5 - Contains Hy - Stu
Given the Dr.

1091-No 6 contains Hy - Au.
Given the Dr.

1092-No 7. may contain Hy - Au
Given the Dr.

Letter

1093 S. H. Hamilton
of wife Indian Territory
Under the Act of May

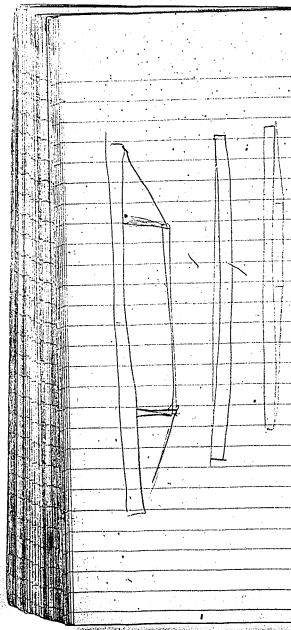
1094. A. D. Lindsay
also Homestead
Address Encinitas San Diego Co Cal
Rancho Mis No 1

1095 Mis No 2
to the Ds

1096 No 1 J R Buchanan
Rainbow
Jackson Co
Ore

wad.

1097 No 2
1098 No 3
1099 No 4 } wad.
letter.



1100 Golden Gate Mining and Development Co
Elk Elma,
platinum ore. Wash.
letter. Test for Pt only

1101. R. D. Casbeline
Philadelphia Pa.
Nickel and Cobalt ore - (much Quartz)
letter

1102. Wm G Jones
% Th. Dr Arthur's
Tenn.
black-gray wacke + buff

1103. W. Wm Thomas
Columbia Tenn.
wad.

1104. No 1. Henry S Fitch sent sample box
654 Fillmore St Francisco
Talk.
1105 – No 2 Dark ore. Given the Dr.
1106 – No 3. light blue (talk)
1107 – No 4 Dark ore (Given the Dr.)
1108 – No 5 light blue (talk).
1109 – No 6 light blue (talk)
1110 – No 7 – Sandstone

1111 Charles H Young
Eagle Bridge N.Y.
Pyrite – gray.

1112 William C. Bishop
Allenspark Boulder Co
Colorado
Fruit Stuff.

1113 N.T. H. G. Evans see previous Phosphate &
Columbia Tenn.
dark-blue with Quartz.

1114 - No 2
Fine wood

1115 John Garrett
Hot Pleasant Tenn.
Fine wood.

1116 Sent by J. Morris in May 1859
(Cattin.)
Fine wood.

1117 D S Ryan
Hot Springs, Ark.
Mixed Stuff. dark Rock Crystal
Quartzite.

1118 Edison Hoge
to the Dr. Pasadena Calif.
Blue gray (Maybe some Specimens)
letter

1119. J A Sutsell
Sample very little, Flat Rock R 2. Box 27
green like Dr. gray stuff (Maybe or specimens)

1120 George Faight.
Joseph Oregon
Wallowa Co.
Quartz.

1121 - No 1 A E Goyette
to the Dr (pyrit) Alcide E. Goyette
Grand Mérel Que.
1122 - No 2 Quartz - Pyrit and some Gold.
to the Dr.
1123 - No 3 - Quartz - Pyrit
to the Dr. (Too Small Sample)

1124. N° 5 W A Jeffers
to The Dr.
Mulberry Ark.
pyrit.

1125 - No 7. Gray Stuff Co. Colo.
to The Dr

1126 - No 10. gray stuff
to The Dr

1127 - No 15 looks like chalk.
to The Dr. Sweal Samples.
Alloy & Gray Co

1128 — Southern Mining & Eng. Co
Goffney S.C.
pyrit

1129 Jas A English
Mt Pleasant Tenn.
Fine Wood

1130 E.C. Babbitt
53 Jacobson Bldg.
Quartz Formulpaide Denver Colo.
and may found rare metals.
To the Dr.

1131 H March Dellinger

Wad & sand. Iron Sta. N. C.
The gold sample did not wash out.

1132-No 1. H L Heckspell

malakit Compton Page Co Va
surface ore, vein 5 feet.

1133-No 2 malakit 8 feet wide

1134-No 3 malakit - 9 feet wide

1135-No 4 chaol pyrit wulfenit?
30 feet wide, a little work done on it.

1136-No 5 22 feet wide vein shipped.
wulfenit? Molybdenglanz?

All 5 given to the Dr.

1137. E L Ware.

Kings Mountain N. C.

Iron wad.

1138 J. Morris in boy 1860
A - Pyrolusite
B - Hematite
C - Specular iron ore.

1139 G.A. Dunlop Mgr.
Cherokee Chemical Co
Atlanta Ga.
wad looks no good.

1140 Seaboard Air-Line Ry
Atlanta Ga.

1140 is a mixed stuff marked:
"Unidentified except as to locality
in which search."

1141 from same party
Marked: "At Borden Springs
Alabamma associated with
manganese ore.
Fine wad

1142 From the same locality as 1140
Wad. Marked "Prof Liebl Pommelle
La Grange Ga says this
shows evidence of Cobalt

1143 To J. Morris from
Some opside Barry Searle
Greighton Ga.

1144 R. D. Drescher
Marion Ky.
Wad looks no good.

1145 John Garrett & H.D. Rutherford
Mt Pleasant Tenn.
Fine Manz. wad.

1146 J.N. Figures
No 1. Columbia Tenn.
Fine wad. From the same place as Lab 1115. sent by John Garrett.

1147 No 2.
Fine wad

1148. W. W. Parker.
Fine wad. Smithville Tenn.

1149. Jacob Yalgar
P O Box 55.
Fullerton Cal.
Gray stuff with some spirit.
Lookers are good.

1150. Mary B Farris
Columbia Tenn.
Many wad.

1151 No 1. H C Weidner.

Blackbird Idaho
gray stuff.

1152 No 2 Blackstuff

1153 No 3 gray stuff 7.7 Cobalt,

All 3 contains some Sulph.
All 3 contains some Arseniate

1154 Slipp-Butler Co.
81 Nassau St. N.Y.
white gray stuff.

1155 Arthur D. Bishop.

Paterson N.Y.
104-106 Washington Street.
Given 7/8 Dr

1156 No 1. Grimm Bros.

wad. Decatur Tenn.

1157 - No 2 looks like Hamatite.

1158 - No 3 - Kaolin Silverly Al.

1159 - No 4 — Ok: Ochre Hyd. of
No 1157 too little for work. now

1160 J. C. Taylor Madison Va.
Gey staff with bills fy its.

1161 R. D. Foerstend
404 M St NW
Washington
DC

Graphite

1162 T L Cook
No 3.
Alpine Ala.
gray-stuff

1163 marked No 4. gray-stuff.
looks no good.

1164 V N Stone
Turbeck, Tenn.
many wash.

1165 M H Johnston
No 1
Iron-ore Little Rock
Box 485. Ark.

1166 - No 2 iron-ore
1167 - No 3 wash
1168 - No 4 iron-ore

1169 F S Storrs
Depot and Engineer of Forts
New Haven. Conn.
Greystoff - limestone.

1170 J W Keener
Sylva N.C.
The Sample contains some Graphite

1171 W. S. Tunnelly
Vernon Tenn.
Contains some Cu pyrite and iron ore

1172 from the same as 1171
Contains some Pb S and Ca Cl3.

1173 Ernesto Armendariz
Estacion Yarbonis Dgo.
lis Nº marked „Z.2." Mex.

1174 lis Nº marked „1-P." (iron-ore)

1175 Frank Morrow
Mt. Pleasant
R.R. # 17, lot 18. Penn.
Wood.

Small Sample

1176 W R Witt
Peach Tree
N.C.

The sample too small for test!
Give Mr Witt a call with it.

1177. R. J. Fretwell.

Danville Va.

He sent it as 2 Samples, but they are the same kind of ore.

Looks like MnO_2

Send Sample Box

1178. J. S. Henderson

Nashville Tenn.

His No 1. wad.

1179. His No 2. Quartz with little wad.

1180 O B Coward.

Webster N.C.

Graphite?

1181 Duncan McGregor
Lot staked out
Solid ore from 4 to 10 ft wide.
about 1200 ft long

1182 Austin Gallagher
industrial Commissioner
Baltimore
Western Maryland Railroad
Company
Marked No 3 — grey-stuff

1183 G O Marshall
Martinsville Va
P.O. Box 86
black-soft-stuff.

1184 W J Hastings.
6/21 Penna Ave.
glenwood Post Bird
Pittsburg Pa

1185 from the same
black iron ore.

1186 T L Ferrell
Nista.
Tenn.
Wrong word - Taken from the box and
marked T L Ferrell's land
10 miles west of Sweetwater Tenn.
looks no good!

1187 from the same as 1186
Taken from the bag. c
Wrongword. marked as 1186. Looks no good!

1188 Louis Hay
Cle-Elum Wash.
Grey-green Stuff.

1189 D.S. Ryan Sent Sample Bag
Hot Springs
Many wood. Ark.
looks good!

1190 from the same as 1189
Some Cu-pyrite + Quartz
In the same bag as 1189.

1191 V.N. Stone
Greenback Tenn.
$CuCO_3$

1192 No 5 J L Cook
Alpine Ala.
Mahogany-wood.

1193 D S Ryan Lot Hum County Ark
Hot Springs Ark.
his black ore iron ore

1194 His red ore - iron ore

1195 G M Dugan
Tip Top Ky.
his iron ore in the wooden-box.

1196 black stuff in paper box.
mahogany wood

1197 - Red sand in paper-bag
1198 - Yellow sand " "
1199 - grey-yellow sand " "

1200 Robert G Wyatt
Bakerville, Tenn.
blue-gray stuff.
given to Mr Dr

1201 S F Black
Contractor and builder
Wellington, Ohio
gray black stuff (of Summer)

1202 W W Jenkins
Dixon Springs
Tenn.
Common coal.

1203 Mon. B. Fariss.
Columbia, Tenn.
Fine wood. very green collor with red

1204 J D Reinhardt
porfirie Alma Ark.
Florette
looks as good!

1205. W H Meyers
Hematite Shrewsbury Pa.

1206 - No 1 F. J. Griffith
1207 - 2
1208 - 3 Western Commercial Co.
1209 - 4 Los Angeles Cal.
1210 - 5
1211 - 6
1212 - 7
1213 - 8
1214 - 9
1215 - 10
1216 - 11
1217 - 12
1218 - 13
1219 - 14
1220 - 15
1221 - 16
1222 - 17
1223 - 18
1224 - 19
1225 - 1x
1226 - 3x
1227 - 4x
1228 - 5x
1229 - 6x
1230 - 8x
1231 - 9x

1232 — 27.2% Cobalt
No nickel. ~~[illegible]~~
7.6% SiO_2

1233 — 37.8% Cobalt
1.3% nickel
8.9% SiO_2

1232 = Concentrates of Cobalt
ore Blackbird dust
Cobaltburg —
Idaho — from
Odell Wilson
Salmon Idaho —
Sent to Contain 26% Co metal

1232 and 1233 given the Dr

1233 Ditto Roadad —
Sent to Contain 39.5% Co metal

1234 Odell Wilson
57 Collins Place
Cleveland Ohio
(See the letter)
Unsorted Sample "Plate ceiling"
looks to be some Arsenicate
Given the Dr

1235 R D Drescher
Marion, Ky.
Finnwolf.
No letter

1236 E.D. McCleley,
(Agent insurance)
Piedmont, Ala.
Marywolf.
No letter

1237. W.A. Grove
Villa Grove. Colo.
Iron ore?

1238 Q. M. Dugan
Sand (yellow) Tip Top Ky.
No mark.

1239 Sand (yellow) from the same as
No mark 1238.

1240 Sand (yellow) the same as 1238.
No mark.

1241 Ky. Silica Co. Tip Top Ky.
White Sand.

1242-No. 1. J. N. Wilcotson Water lime Water 1st
(See 10 J. Rg) Anniston Ala.
Grey stuff (clay)
1243-No. 2 (See 10 J. Rg) grey stuff
1244-No. 3 (" ") Clay
1245-No. 4 (" ") grey stuff
1246-No. 5 (See 24 J. Rg) grey stuff
1247-No. 6 (See 13 J. Rg west) grey stuff
1248-No. 7 (See 5 " ") grey stuff

1249 B F Coll
Wilkesboro N. C.
Specular iron ore, Calcs.

1250. B. R. Thomas
Waverly Tenn.
Iron-ore.

1251. P A Graham
Imperial Dgo Mexico
Say to contain Gold & Pt.

650

65 — 1/1000

65 — .10/100

6.5 — .1m — 1/10000

650 — .1m — 1/10000

650 — 1/1000

650 — 10/1000

6.5 — 10/10 Tenths

10

RGC 100 Pm

1900) 1 350 000

300) 1350 (45
1200
1500
9000

2250
4500
15000

200
300
4) 600
15000

15000 (2250
4500
4500
3000
3000
3000
3000

2000
1 5
3 6 1 0000
3 0 0 0 0 0 0 (12000

150) 1800
1500
3000
3000

800) 12000 (40
12000

150 40
3000 20
800 10

[ITEM FOUND IN BOOK]

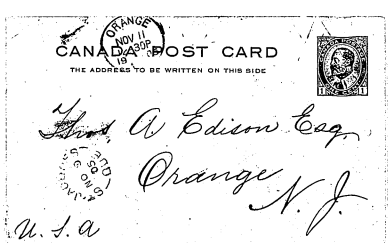
P. E. LeBLANC,
St. JACQUES,
Co. Montcalm, Que.

Nov. 9th 1905

Have not yet received any thing mentioned in yours 1st dated Oct. 27th ult. Sorry, would have been well pleased receive same.

P. E. LeBLANC,
St. JACQUES,
Co. Montcalm, Que.

[ITEM FOUND IN BOOK]



[ITEM FOUND IN BOOK]

Mr. Olson:

We wrote this
man that box containing
sample of Cobalt Bloom
would be sent under separate
cover. J. A. Bodman

This I am sure has been sent.

[ITEM FOUND IN BOOK]

Yellow pine 461.

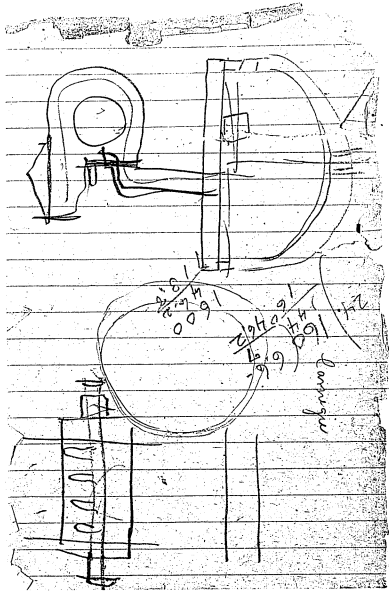
of merit of woods - from Sorting in NOH
& Mancc.

443	12	White Pine
5 to 690 —	13	" Ash
750	4	" Maple
	10	NC Pine
	3	Tamarack
570	15	Bay Wealaf
	~~5~~ 1	~~Red Oak~~
005 to 900 —	6	Red Oak

Butternut	376	Tamarack	383
Cedar	561	Willow	400
Elm	650	Sassafras	482
Norway Spruce	512		
Hemlock	368		
Hickory	566		
Poplar	383		
Ash "	329		

[ITEM FOUND IN BOOK]

[ON BACK OF PRECEDING PAGE]



Notebook, N-06-00-00.1

1252 G. P. Alexander
Cu. pyrite Granite Pass Oregon
Trace Co.

1253-No 2 E. B. McClelen
0.28% Co + Ni
Mang-wad Piedmont Ala.
1254-No 3 from the same as 1253
trace Ni & Co
0.27 Co

1255 Chas. E. Mabebace
Mang-wad Canton, Ga.
The sample too little!
Trace Co

1256. J J Lander.
Bingham Me.
Molybdenite crystals!
No Co

1257 John Garrett
Mt Pleasant, Tenn.
Fine wad!
4.85 % Cobalt Nickel
8.2 Sand -
g.b.: Cobalt
Mt Pleasant

1258 - No 1. J Houston Leeds
0.1% Co
1259 - No 2 Lexington, Va.
Trace
1260 - No 3
Trace
All Mang - wad.
looks no good!

1261-No 1 Mrs G. Ray Nelson

Trace New Decatur Alabama

1262-No 2.

galena = Pb S No gold. No Co

1263 - No 3. 0.06% Co

Many-wood. Little green color with HCl

1264-No 4. Trace Co

1265 A W Adams

Trace Co Brayton Yuma County Arizona Ty.

1266 V N Stone P.M.

Quebeck Tenn

Wad:

looks no good.

no Cobalt

1267-No 1 Geo H & Bryan
0.01% Co
Many-wood 37 & High St.
Columbia Tenn.

1268-No 2
No Co
Many-wood.

1269 W B Lang
Maryland Springs
Ca Oz. Tenn
Trace Co

1270-No 1. H. C. Richardson.
Trace Co
many wood Dickson, Tenn.
1271-No 2 many-wood
0.25% Co
1272-No 3 + No 4. many wood
Trace Co
1273-No 5 many-wood.
0.02% Co

1274. S. T. Smith

Trace Co Garland Turnpike Co
wad with much Quartz Ga.

A little piece in paper was pure Sulphur

1275 E. A. Cook

Trace Rich Mountain
Jackson Co N. C.

1276 - No 41. R. W. Walker
0.8% Co + Ni
Fine wad. Fish Springs, Tenn.

1277 - No 42 Fine wad.
0.6% Co + Ni

1278 - No 43. Fine wad.
0.41% Co + Ni

1279 - № 44 R W Walker
0.27% Co + Ni Fisk Springs Tenn.
Fine wad

1280 - № 45 Trace Co
looks no good!

1281 - № 46 0.4% Co + Ni
Fine wad

1282 - № 47 0.37% Co + Ni
Fine wad.

1283 from O F Jones 202 Miller Bldg
Chattanooga Tenn

Small box wad - looks good?
In large quantity - in
E Tenn -
0.15% Co

Tested for Bismuth following Bi

No 9 Lab - O Horrells No 3

329 1-12% Bi from W O Dobson
Telegraph GNRR
Snohomish Wash -

361 - Don H Kedzie
Lordsburg New Mex

513 M P Ray Cheadum - Solid Galena

886 Rirahlin No 1 Cu ore
894 "
850 W A Harman White Horse
Yukon Cu ore - 0.53% Bi

1069 L C Butler 81 mostly Cu ore
gold base 1/2% Bi

1284. The High Top Copper Mining Co.
Trace of Co 150 Nassau Street
Cu-ore New York.

1285 a No 1 H. C. Coleman
1286 a No 2 Bona, Tenn.
0.93% Co
0.25% Co
looks like good.

1285 b No 214 H Theo. C. Moller
gray-stuff. Amritsar Punjab.
4.0% Co
1286 b No 215 H (sand).
1.0% Co
1287 - No 825 H. Gray Stuff Arsenide
2.0% looked like
1288 - No 160 T. ironore (may be some Co)
4.0% Co

1289 - No 1 Miss L. L. Knoble
2.0% Cu
Carter, Wyo.

1290 - No 2
0.4%

1291 - No 3
0.1% Cu

1292 - No 4
Cu

1293 - No 5
0.4%

1294 - No 6.
Trace

1295 Chas H Brown
0.9% Cu
His No 1 Knoxville Tenn

1296 - No 2
Trace Cu
142 Maryvood

Morris Idaho Cobalt
Mines —

Letter from F.W. Cagles
offering Johnnie Nos 1, 2 & 3
Containing Vein No 1 for $25000
if taken before Dec 31 06.

Letter from H.C. Weedner &
John M. South offering
Hawkeye group of
5 claims for
Thirty thousand dollars

Letter offering Togo Lode
Signed by A C Ludwig
Blackbird Lehmi Co.
for $2500 —

Letter offering the High Fire
group of Claims Signed
B F Dugan
Blackbird Islands
for $12000.

Blueprint of part of
dust on hand

Letter from Frank S Wright
Salmon City —
offering Queen group for
$40.000, Lone star 20 000
Rainbow $20.000.

George Smith
Geo S Lewis -
Salmon —
Recorg Jun 1 2 3 4
Shoshone -
2½ Mi up Blackbird Cr S Fk
on W of Rainbow & E of
Lonestar $8000 —

Letter Wiley & Rose
Blackbird
~~Brooklyn group claims~~
~~11 claims $35000 —~~

~~A M Colwell Mrs Colwell~~
~~Lot claim $10.000 —~~

Wiley & Rose
Elizabeth T Rose
Leroy & Mountain Jay
group of 44 claims
$65000.

1297 h°1. J. A. Drake
5.5% Co
Assessments Smithville Tenn.
In great quantities

1298 - h°2 looks as good!
0.52% Co

1299. J. Morris
0.7% Co
Copperas near Virginia N.C.
Lands of Logan York Pa.

1300 Morris

Copperhead ore — Main Ridge of Rockies Idaho

40 miles West Red Rock

Party says gets a bunch of this

0.5% Co

1301 T L Cook. Alpine Ala.

Trace Co — looks no good!

1302 F S Finch? Birmingham Ala

Trace Co — looks no good!

1303 J. A. Albertson
Mung-wat. Dalton Ga.
Trace Co.

1304. From Agency of
Bear, Sondheimer & Co.
No. 42 Broadway
New York.
Gray Stuff. All grind up.
Zinc Powder sent to E M Co
Neorbh

1305 C H Betz
Trace Co Chattanooga.
3 different Bat No
Marks Tenn.
Sent to Morris
mixed them all 3 together.

Notebook, N-06-00-00.3

1 No Co or Ti Res red large Hs brown

2 Trace Co No Ti Res red large Hs collie

3 No Co or Ti Res red large Hs brown

4 No Co or Ti Res gray large Hs yellow

5 No Co or Ti Res gray large Hs yellow

6 No Co or Ti Res brown large Hs yellow

7 Co 4 Lin No Ti Res gray large Hs collie

8 No Co or Ti Res gray large Hs collie

9 Trace Co No Ti Res white large Hs yellow

10 No Co or Ti Res red large Hs collie

11 No Co or Ti Res gray Hs collie

12 Cox 12 Ind Same Ti Res gray large Hs little gray Hs brown

13 No Co or Ti Res gray large Hs collie

14

15 Prac Co Mo Ni Ro brown large H.S [illegible]

16 Co x 3% Mo Ni Ro grey large H.S pink

17

18 Co 100 x Mo Ni Ro grey large H.S pink

19 Co 100 x Mo Ni Ro grey large H.S pink

20 Co 0.6% Mo Ni Ro grey large H.S pink

21 Co 2 x Mo Ni Ro black large H.S little pink

22 Co 0.07% Mo Ni Ro black large H.S [illegible]

23 Co 0.12% Mo Ni Ro grey large H.S little pink

24 Co 0.18% Mo Ni Ro black H.S polish

25 Co 0.075% Mo Ni Ro black large H.S [illegible]

26 Mo Co x Ni Ro Rock large

27 Co 0.33% No Li Res black large
28 No Co or Li Res brown large his pink
Wed 29 No Co or Li Res gray large his orange
Apr 30 No Co or Li Res black large his yellow
Apr 31 No Co or Li Res gray large his yellow
Wed 32 Co 0.015% No Li Res gray large
Wed 33 No Co or Li Res Red large his yellow
Wed 34 Trace Co No Li Res gray large his yellow
Wed 35 Co 0.1% No Li Res brown large his yellow
36 Trace Co No Li Res yellow large his yellow
37 No Co or Li Res gray large his yellow
Apr 38 No Co or Li Res gray large his green
39 No Co or Li Res brown large his gray
40 No Co or Li Res gray large his green

41 No Co or Ni Res red large, H_2S colorless

42 No Co or Ni Res gray large H_2S colorless

wad 43 No Co or Ni Res brown large H_2S colorless

44 No Co or Ni Res green large H_2S colorless

wad 45 No Co or Ni Res gray large H_2S colorless

wad 46 Co 0.05% No Ni Res gray large H_2S colorless

47 No Co or Ni Res green large H_2S colorless

48 Trace Co No Ni Res gray large H_2S colorless

49 No Co or Ni Res gray large H_2S colorless

50 Co 1.5% Some Ni Res brown large H_2S very pink

51 Co 0.05% No Ni Res gray large H_2S colorless

52 Trace Co No Ni Res brown large H_2S colorless

53 No Co or Ni Res gray large H_2S green

54 No Co or Ni Res gray large H_2S colorless

Specus from No 1 Carload Glandemy
fried with Ray Copper Mills oling
Crushed 200 mesh roasted tick
all sol HCl Cono -

4 Tests.

No 1 50 grms roasted ore 20 cc H_2SO_4 Sp.
200 cc water -

No 2 Dup except 22.5 cc H_2SO_4

No 3 Dup except 25 cc H_2SO_4

No 4 Dup except 27.5 cc H_2SO_4

After nearly boiling for 6 hours
residue of No 1 weighed 39.750
2 " 38.250
3 " 37.000
4 " 37.000

Evidently this batch of ore did not dissolve
well or SO_4 too dilute -

Put the residues together
154 grammes with 115 cc H_2SO_4
+ 500 cc H_2O - *

All these Experiments above vitiated by using wrong bottle & getting dilute instead of Conc H_2SO_4 -

* Experiment on dissolving residue have Conc acid -

fractional precipitation -
Na_2CO_3 no difference

Sulphite Ma No difference

Arsenate Na - precips Cobalt + leaves nickel possible to make perfect separation -

Phosphate Soda —

This acts Curious among all kinds of precips — should be investigated —

Tungstate Soda — Curious

Ni alone gives white with green lings Liquor Clear

Cobalt alone pink if I remember right no lings to filtrate

But if both Co + Ni Sulfates in Sol, The filtrate is deep green clear — This is worth investigation

Chromate K = all precips also in Color — Dil SO4 - put in precip dis out some — leaves black precip — all purples — what is it ? ? ?

Think the black mass — dilute H_2SO_4 is Nickel —
Its soln HCl dilute & gives green filtrate — The last precip dissolves HCl & NH_4OH H_2O_2 added gives strong CoCl solution —

Dried Mixed Sol. Co Ni SO_4 — with Boracic acid mixture then precipitated in 2 lots by KOH & Cooking
1st precipitate apparently has the Ni & 2nd the Co — by precipitate proportioning & long Cooking & re Cooking 1st precip probably Ni can be got free from Co
Theo Cooks OK —

The best separation (?) Cobalt of ~~from~~ of Ni from Co is by crystal of the Ni to Ammonium Sulphate & Ammonia Com solution + then Recrystallizing 2 or more times —

1 | 37.740

200.000
37.740
162.26

Expmt-

200 grms Car 1 - Oz treated HCl
des fume - roasted residue 325
grms - Used 200 cc 1.8 SG H_2SO_4
Cook 16 hours hot plate (evaporation
filtered - residue dried & roasted so
most ~~of~~ SO_3 come off - not fully
as used Evap dish dry flame right
on bottom = Weight 37.740 grms
162.26 grms dissolved - Think if all SO_3
driven off probably residue 62 30 or
less grms

Boiled above residue in Water - filtered
trace Silver came out some Co or Fe_2
only trace Co however

This makes 1000 grms Orig
670 leaffer fume out
325 Roasted
55 Residue

I now whole Residue is wet put in 30 cc
Conc HNO_3 & add 10 or 15 cc H_2O
& heat - No Cobalt & very little Fe_2
if any come out - Some Silver shows

A W Gemmill
The Anglo French Nickel Co LT
Hafod Isha Works
Swansea Eng

Says gets Wind from New Caledonia
100 fr for 4½% ore (CoO 7 grms 19.4 cents)
4 francs increase for each tenth
of a unit up to 5%
over 5% 5 francs per tenth
of a unit.

Best man at Noumea
is
Thos Manning
Noumea
N Caledonia

for 4½% if oxide CoO - 28.3 cents Noumea
with fr 16 duty 36.8 cents,
40 cents CoO for Africa up to 4½% or 50 cents Co pattes above 5% —

After H_2O & HNO_3 exhaustion residue
weighs 29.370 grms its whitish

Weight after $CoSO_4$ residue roasted 1/2
hour ~~red~~ red heat weighed
270 grammes —

After exhaustion with boiling water & what
10% H_2SO_4 ~~[illegible]~~
Weight residue 43 grammes,
Showing that 227 grammes went
into solution,

Took 10 grms of the dried 43 grms &
boiled in water No Cobalt came out,
it does — Dilute H_2SO_4 — Lots arsenic
Consent with H_2S —
Apparently no Ag in it —
Full of Bismuth, guess Bi alloys in it,

1st
10 grms of Residue from dis in H_2SO_4
has very little Co & no As_2O_3;
has a black H_2S precip which
prob Copper —

The 43 grms not water sol
after Cobay leached out
Oxalate Ammonium Co - 10 grms
gave Evap dark brown free NH4 Sal
deep yellow red -
Roasted thus to yellow heat to cancel
a trace of Arsenic left,
Was black Oxid by HG -

This show Arsenic Fe can be
fully roasted to Fe_2O_3 + As driven
off

Balbach Terms

Ore running	400 oz Ag per ton	Smelting	$16.00
400@500	"		5-00
500@600	"		4 00
600@700	"		3 -0
700@800	"		2 00
800 to 1000	Nochg —		

Settlement to be based on assay of Ledoux & Co Weight & Moisture as found on our work in presence of Ledoux & Co representative — to be taken & 95% of the Ag Contents to be paid for at regular price for Ag ruling on day of receipt of Lot Cos assay Certificate showing our corrected moisture Settlement 14 days after date of such assay Cash or Cash less 1% — Delivered Fob Newark works

Balbach Smelting & Refining Co

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END

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at
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18 June 1981

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The original documents in this edition are from the archives at the Edison National Historic Site at West Orange, New Jersey.

ISBN 0-89093-703-6

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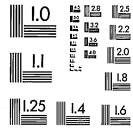

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